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A THERAPEUTIC GUIDE

TO

Alkaloidal—Dosimetric—Medication

BY

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Second Edition Enlarged and Revised.

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DEDICATION

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This book is dedicated to the many students of the old Cincinnati College of Medicine and Surgery, to whom the author has had the pleasure and privilege of lecturing for the past twenty years. With the association of student and professor go recollections so pleasant that the entire period is looked upon as one of the most agreeable and satisfying in his entire professional career.

THE AUTHOR.

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PREFACE TO FIRST EDITION

The following pages are offered to students and practitioners of medicine simply as a guide to the practice of "Dosimetry," or Alkaloidal Medication. The book does not contain a complete, scientific exposition of the physiological actions of the active principles of all plants, upon men and animals. Only such prominent physiological effects are described as will enable practitioners to prescribe these selected medicines intelligently. Attention is particularly given to the application of remedies in the treatment of the sick.

Since the literature on the subject of these remedies is still meager in amount, the writer has been obliged to draw chiefly from his personal experience. The dosage for children, especially in the case of aconitine, has been particularly difficult to ascertain and, only after prolonged experimentation, not unaccompanied with considerable anxiety, has a safe and efficient dose been determined upon.

The text contains the subject-matter of two courses of lectures on "The Uses of Dosimetric Medicines," delivered in connection with lectures on Clinical Medicine to the students of the Cincinnati College of Medicine and Surgery."

The various remedies, an account of which formed the basis of these lectures, are considered the most important in general use, and are usually sufficient to enable a general practitioner to treat successfully such cases as present themselves to him.

The writer does not, however, wish to convey the idea that the list of alkaloidal granules con-

tains all the medicines prescribed by dosimetric physicians. There are a great many excellent medicines which cannot be prepared in granules or even in tablets, and there are others, prepared in this way, which cannot produce any effect whatever when given in such doses as these granules contain. This much, however, is certain, that the more important remedies are prepared in granule form, and that the majority of diseases are treated more successfully by giving small and frequently-repeated doses of active principles, than by giving cruder preparations in large doses at long intervals of time.

Not all the medicines used in dosimetry are alkaloids. Among them are found resinoids, glucosides, acids, salts of various metals, extracts and various chemical combinations and other substances which cannot be classed with the above, as pepsin, diastase, iodoform, nitroglycerin (glonoin), camphor monobromate, etc.

If a perusal of the following pages shall enable medical practitioners to apply the active principles of plants, successfully, for the alleviation and cure of disease, the object for which they have been written will have been accomplished. In recasting the lectures into the present form, frequent recourse was had to the works of Burggræve, Castro, Bartholow, H. C. Wood, Potter and Waugh, and to "The National Dispensatory," Sajous' "Annals of the Universal Medical Sciences," and to the "Reference Handbook of Medical Sciences."

JOHN M. SHALLER, M. D.

Cincinnati, O., 1895.

PREFACE TO REVISED EDITION.

The fact that several editions of this little book were issued during the first years of its publication, and that the demand for the same still continues great, are sufficient reasons to put forth a revised and enlarged edition.

The text and substance of this book is compiled from notes of clinical and physiological lectures delivered to the students of the Cincinnati College of Medicine and Surgery.

The chief object in mind, while delivering these lectures, was always to bring out practical points whereby the student could thoroughly understand normal physiology and, at the same time, study the physiological action of drugs and, by comparing these two, by offsetting one against the other, he might be able to apply this particular information at the bedside of the sick.

He was taught in his diagnosis to determine, as far as possible, any and all departures from normal physiological actions. He was taught to mentally picture any deviation from health such as vasomotor disturbance or hypersecretion, and then apply some remedy that would restore this abnormality.

He was taught that most diseases were, at first, simply slight deviations from what was physiologically right, and that practically he was to apply remedies which would restore these departures to the normal.

He was not taught that disease must be taken in its entirety and treated as such, but to observe all physiological departures and attempt to re-

store them, and in doing so, he was to use any means, from whatever source possible, in order to produce the desired results.

Not only was he taught to determine the exact physiological departures, but he must sedulously seek for the causes that produced them and act as directly on them as it was possible to do.

The writer feels that it is a great pleasure and deems it a great privilege, to be able to present, particularly to beginners, whether they are old in the practice or young, the great fundamental truths that surround Alkalometry.

The greatly superior efficacy, of the remedies employed, the immense advantages and the greater control over organic functions, the rapidity of cures, to say nothing of the pleasanter method of medication, each and all place it above all other methods of prescribing.

Continual practice along these lines certainly increases faith and convinces practitioners of the wonderful curative powers of remedies administered. If any one has lost faith in the power of medicines to cure, let him try Alkalometry. It does not disappoint.

In revising this little book, it was found necessary to make some radical changes in the text, not so much as to change views, but to express in language more emphatic, the trust and confidence gained years ago in the efficacy and potency of Abbott's granules. This faith has never been shaken. The more important articles, like that on "Aconitine" have been entirely rewritten. A number of newer remedies have been added, only however, as they have been proven

by personal observation, to be of true worth. Many of the alkaloidal granules found in Abbott's list are not mentioned, because the writer has had no personal experience with them, but many of them have likely proved valuable in the hands of other physicians.

The object of this Guide is to present only those remedies which the writer has found to be reliable and valuable.

The idea of the "Clinical Index" was taken from Bartholow's Materia Medica. "Therapeutical Suggestions" were added whenever it was thought that such might lead to useful applications, or when the data concerning a medicine was not of sufficient importance to classify it under a separate chapter.

The writer will certainly feel fully repaid if the reader but gains sufficient knowledge to even successfully apply aconitine in the treatment of acute febrile diseases, for, if he will but gain this knowledge, it will surely lead to the further study and application, of what is, without doubt, *the very best method of treating the sick.*

JOHN M. SHALLER, M. D.

Denver, Colorado.
January, 1904.

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INTRODUCTION

About fifty years ago, Professor Adolph Burggræve, of the University of Ghent, conceived the idea of administering in disease the active principles of plants prepared in granules, according to certain simple rules.

Because the medicines were "mathematically measured" the name Dosimetry was applied to distinguish this method of prescribing from others then in vogue. Dosimetry is not a new system. There is nothing in it that can raise it to the dignity of a pathy.

The purest and the simplest forms of medicine are administered, in minimum doses, frequently repeated, until improvement is manifest or until physiologic effects are produced.

The indications for the use of these medicines are the same as have always existed.

For fever, aconitine, veratrine or digitalin.

For pain, codeine, morphine.

Heart tonics or stimulants, nitroglycerin, caffeine, digitalin, apocynin, strychnine, cactin, sparteine, strophanthin and convallamarin.

Cicutine hydrobromate replaces the bromides and quiets mental and muscular excitement.

Calcium sulphide is the remedy used to successfully combat zymotic poisons.

Quinine for malaria.

Mercury for syphilis.

Any remedy that is good and that cures is used, no matter what its source or by what school it has been first advocated.

Whenever practicable, isolated active principles are used, in place of crude preparations such as tinctures or extracts.

One of the precepts of dosimetry is: "To acute diseases oppose acute treatment; to chronic diseases, chronic treatment." (Burggræve.)

Active treatment applied to acute diseases probably led to another useful and important precept, that of jugulation. There is nothing so important, nothing that should be so indelibly stamped upon the medical mind, as this fact, *that acute inflammatory diseases can be aborted.* There is nothing of theory about this. *"It is a fact."* When acute inflammatory disease, as pharyngitis, bronchitis, pneumonia, pleurisy, peritonitis or meningitis, is about ready to assert its presence by well-known symptoms, pathologic changes are not yet so firmly established that they cannot be diverted and checked. One of the primary acts accompanying inflammation must be through the vasomotor centers, permitting local congestion by dilatation of arterioles. If active treatment is begun during this congestive period, there is very little difficulty in restoring the disturbed circulation to the normal and consequently preventing an inflammation. If inflammation has already set in, it too can frequently be checked or modified. The excessive amount of blood in the inflamed organ can be reduced, the exudation absorbed and the circulation in the disturbed area again returned

to its normal condition. This is all there is in aborting or jugulating acute inflammatory diseases. The method of accomplishing this is fully explained in the article on aconitine.

It is doubtful if we are always fully aware of the important part played by the nervous system in producing primary changes in acute inflammatory diseases. There could be no congestion or exudation unless the vasomotor system produced relaxation of the arterioles. For the cure of all such conditions it is necessary to be able to work through the vasomotor nervous system, so as to enable it to regain its control over the blood-supply.

In lobar pneumonia the vasomotor centers which supply the affected lobe seem to be paralyzed. The small arteries dilate, the capillaries are overdistended with blood, and very rapid exudation results. While congestion is going on, or possibly before exudation has occurred, if some remedy could be administered which acting through the vasomotor centers could cause arterial contraction, a cure might result. Or if by some means the flow of blood could be directed to some remote structure and drained away from the seat of congestion, the threatened inflammation could be overcome and reduced, simply by the withdrawal of blood from that part.

Bleeding was a method formerly employed and no doubt numerous cases of pneumonia, pleurisy, peritonitis and cerebral congestion, were aborted. Bleeding would still be a valuable means in many cases. Fortunately we have other methods by which the blood can be di-

verted. The household remedy of sweating or purging when one has a so-called "cold," necessarily prevents many inflammatory diseases. Violent purging and sweating are similar in their *modus operandi* to bleeding. In both, a large amount of fluid is withdrawn from the body; in the one instance through the bowels, and in the other through the skin.

The several pints of fluid that are drained from the blood-vessels by purging and by sweating withdraws the afflux of blood from the seat of the "cold."

"Cold" means an inflammation somewhere. While the term has been ridiculed because of its indefiniteness, yet it means congestion and inflammation of the nasopharynx, bronchi, lungs, peritoneum or other serous membranes, or the muscles or of some structure. Whether germs produce every so-called "cold" is not a matter of much importance in the treatment, provided that the primary pathologic condition of the circulation is fully understood to be that of congestion.

If this one feature of primary congestion and its subsequent inflammation could be more constantly present in our minds as the most frequent accompaniment of disease, it would be easier to comprehend the necessity and value of jugulation. If Dosimetry were robbed of its chief doctrine, jugulation, and robbed of its most important remedy with which jugulation is produced, aconitine, more than half of its value and usefulness would be lost to the general practician. Acute inflammation has been

or is present in the majority of patients treated. Realize the presence of this inflammation, what it means, what precedes it. Acquaint yourselves with some medicine that can abort a congestion or its advanced condition, that can control it during its early stages, and if this has been accomplished, you are master of the majority of acute diseases that will come before you.

DOSIMETRIC FORM OF MEDICINES.

It has been found most convenient for dispensing to prepare the medicines in granules which contain minimum doses. When they are made in large quantities greater accuracy of the dose in each granule is assured than when a prescription is written, and only a small quantity of the drug is used.

The granules contain accurate amounts and are reliable because uniform results are obtained from them. They are extremely convenient for dispensing, and when a solution is preferred they are quite soluble, particularly in hot water.

It is impossible to practise medicine successfully by means of granules alone. There are many important medicines, as iodides and bromides, acetanilid, bismuth, sodium salicylate, sulphocarbolates, that require larger doses than could be incorporated in granules. The physician must select those remedies which appeal to his judgment as being proper. He then should select the form in which they are most convenient for dispensing and with which he is most likely to serve the best interests of his patient and himself. If these points are carefully

and conscientiously considered and acted upon, his way will then be the best one for him.

Dosimetric granules represent a minimum adult dose, and in acute diseases they may be administered every fifteen minutes, every half-hour or every hour, according to the severity of the attack, until some improvement is manifested or physiologic effects produced. The medicine should then be given at greater intervals. By pursuing this method closely it is simply impossible to overdose the patient. Alkaloids and other active principles and powerful drugs are thus rendered perfectly free from danger. To insure absorption of the granules, treatment is usually begun by giving a dose of Saline Laxative to clear and freshen the alimentary canal.

In cases in which the mucous membrane of the mouth is very dry, indicating that stomach solution will be slow, it is best to prepare a solution of the granules in water. Combinations may be made with different granules without the fear of chemical incompatibility, except in the case of tannic acid. This granule should never be given with any alkaloid, as it forms an insoluble tannate.

One advantage of the alkaloidal method is that in acute diseases active treatment is begun immediately, even before a positive diagnosis can be made. This is done with the hope of checking the progress of the impending disease and of aborting it.

Physicians who have tried this method testify to its wonderful efficacy in jugulating many acute

inflammatory diseases, a thing comparatively easy to do at the beginning of the attack, provided an effort is made to do so. The medicines usually used for this purpose are aconitine and veratrine.

There is no recognized dose, for no one can possibly say how much of a given remedy will be required to relieve a symptom, therefore a minimum amount should always be given, and repeated frequently until the desired effect is obtained.

As a rule small doses, frequently repeated, produce more satisfactory results than large doses given at longer intervals of time. In using potent remedies, particularly narcotics, a dose introduced into the circulation, as by accidentally injecting into a vein, sometimes produces alarming symptoms and sometimes sudden death. The respiratory and cardiac centers are overwhelmed by the large amount of drug passing through them in a concentrated form. The medicine has not been diffused throughout the entire mass of blood. If this same dose had been injected into the cellular tissue from which it would have been absorbed slowly during a period of probably fifteen or twenty minutes, diluted largely by the blood, nothing of a serious nature would have happened.

Medicines when absorbed act upon some nerve center and in this way produce the effects desired. Medicine itself does not reach the seat of pain and by a local action produce the relief obtained. To produce desired effects systemic medicines

must enter into the circulation and pass through nerve centers before they can bring relief.

There is one feature that seems astonishing when looked at in the following light: One-fourth grain of morphine will usually relieve an acute pain, no matter how it enters into the circulation. Thus, one-fourth of a grain becomes mixed and held in solution by a large amount of blood. A man weighing 120 pounds has about 10 pints of blood. This morphine is disseminated throughout this entire mass of blood and circulates in every part of the body, and yet, notwithstanding this high dilution with so much fluid, it still produces its wonderful effect. It is more difficult to comprehend how such a minute dose as 1-500 of a grain of some drugs can produce any effect whatever, on entering and being disseminated through such a large amount of blood. It simply shows that the nerve centers upon which these remedies act and produce good results are extremely sensitive.

This calls attention to another fact, that diluting systemic medicines largely with water does not weaken their potency; for this dilution must be slight compared to that which results when the remedy has passed into and has been disseminated throughout ten or twelve pints of blood in the human body.

The advantages of administering minimum doses, frequently repeated, and ceasing when results are obtained, are, that much less of the medicine is needed. Overdosing is not so likely to occur. The constant repetition of small doses

produces a gradually increasing effect, more quickly and more lasting than larger doses given at longer intervals of time.

Besides giving small doses frequently repeated, another important feature in connection with alkaloidal medication is to anticipate harmful tendencies of diseases. In capillary bronchitis, in peritonitis and in diphtheria, paralysis frequently occurs. We should not wait until there are evidences of paralysis, but we should apply our remedy before paralysis makes its appearance; that is, anticipate it.

All schools of physicians use but one medicine to stimulate paralyzed nerves and to restore paralyzed muscles, and that medicine is strychnine. There is no other medicine but strychnine that can so effectually stimulate the vital functions and arouse nerve force. If strychnine is a proper remedy to use to cure paralysis, it is also a proper remedy to use to prevent paralysis. Whether paralysis is actually threatened or not, the administration of strychnine cannot harm the patient, but on the contrary it must greatly benefit him, for it is the best general tonic we possess. There is hardly a disease in which strychnine may not be given with advantage to the patient.

In the treatment of infectious diseases the *materies morbi* is never lost sight of, and every endeavor is made to eliminate and to neutralize it; first by the action of the Saline Laxative upon the intestines, kidney and skin; then by the administration of calcium sulphide throughout the entire course of the disease. In the blood,

the sulphureted hydrogen evolved from calcium sulphide may neutralize the products of germ-activity, but it most probably acts upon the secretions.

The cause of disease always should be sedulously sought for, with the object of applying treatment directly to it. In typhoid fever a specific germ inhabits Peyer's patches. These germs and the absorption of their products cause the fever. Every endeavor should be made to clear the intestines of the fermenting germ-products and to prevent their absorption. Calomel and the sulphocarbolates are probably the best remedies for this purpose, and the latter should be given throughout the entire course of typhoid fever.

This is called dominant treatment, which means treatment directed against the cause of the disease; and if the cause is unknown, treatment must be directed against the most prominent symptom. Rachitis requires salts of lime. Inflammation requires aconitine. Paludal infection requires quinine. Syphilis requires mercury.

Whatever concomitant symptoms arise during the course of disease, as pain, diarrhea, vomiting or insomnia, they require what is called variant treatment. This treatment is limited to the symptoms and is discontinued as soon as relief is obtained, while the dominant treatment is continued as long as the disease lasts.

There may be some difficulty experienced at first in passing from prescription writing to dispensing tablets and dosimetric granules. The trouble lies in substituting these newer forms

of medicine for our long-tried and favorite prescriptions, which every physician has, one combination for fevers, another for coughs, another for diarrhea, etc.

For the general practician the principal prescription is one for fever. Formerly the writer used liquor ammonii acetatis, to which syrup ipecac, tr. opii camphorata or tinct. ferri chloridi, was added as indicated. Aconitine replaced liquor ammonii acetatis. Emetine took the place of syrup of ipecac. Codeine was used instead of opiates. Tincture ferri chloridi was thought to be indispensable in pharyngitis and diphtheria. For the last fifteen years the writer has not prescribed it once, and he believes that his patients recover more rapidly without it. It is quite a struggle to give up the old and the tried. There are always doubts about the new forms no matter how strongly they are recommended.

To pass from dispensing eclectic, homeopathic or old-school tinctures and fluid extracts is just as difficult. But one trial of aconitine in fever will shake the faith of any practician in his long-used favorites, no matter from what school he may be.

Always use that which has been found to be good and reliable whether it be mineral or vegetable.

The reason why most plants are used medicinally is because they contain active principles. In other words, the healing or medicinal part of the plant is the active principle. It can be isolated from a large mass of inert material. When a solid extract or the plant itself is ad-

ministered, the stomach and intestines separate the soluble from the insoluble matter. Many substances, however, pass with the active principle into the circulation, that are not needed. If morphine or codeine is indicated, what benefit can be derived by giving about eighteen other alkaloids and ten inert substances found in opium? It should be a great satisfaction to know that just so much of an active principle is given. Tinctures, extracts and infusions are generally given because they contain active principles and for no other reason. Tincture of aconite is given because it contains aconitine. It is doubtful if this is always thought of. Yet this is about all that there is in aconite that is of medicinal value.

While the dose of the tincture is known, it is doubtful if all physicians who prescribe the tincture know the dose of aconitine. It is impossible for them to know how much of the active principle is contained in each dose of tincture administered. It would certainly be more satisfactory, more accurate and safer, to know absolutely and positively how much of the active principle is being prescribed. *The leading feature in dosimetry is to prescribe known quantities of the active principles.* This cannot be done when crude preparations of medicinal plants are given. There is only one accurate way, *i. e.,* prescribe the isolated active principle itself.

There is great hesitancy and fear about prescribing aconitine. There is one point that seems difficult to understand, why physicians should

dread prescribing aconitine, which can be given in known quantities, and yet not hesitate to prescribe tincture of aconite, which is given because it contains aconitine, but the quantity cannot be accurately known. Why should aconitine be ranked as a poison and recommended for external use only, and represented to be uncertain and unreliable, and a dangerous remedy, when the tincture is highly recommended with its unknown quantity of aconitine?

There are thousands of physicians who use aconitine daily, who know that as they use it it is not a poison, that it is not uncertain or dangerous. One thing is sure, each man's experience is invaluable to him. The results which he obtains from medicines employed are to him facts. He knows that certain positive and beneficial results follow the administration of aconitine, no matter how humble he may be in his profession. Because Gould, Wood, Stille, or any other renowned teacher, says aconitine is a poison, the fact is not changed that aconitine is a useful and harmless medicine in his hands.

Every man's own experience is his guide. Some physicians get negative or even bad results from a certain medicine, which in the hands of other physicians produces nothing but good ones. Every remedy has its strong adherents who are honest and in earnest as to what they say of their success; while this same remedy has its opponents who speak of it only in condemnation. The fault does not always lie in the medicine, but in the prescriber.

Let us consider our favorite and most impor-

tant medicine, aconitine. We all know physicians who would not prescribe it under any circumstances. Their minds would be in a state of unrest and anxiety if they gave it to an infant. They would expect its death to follow. The impression prevails that it is the most potent of poisons. They forget that substances are poisonous to animal life only when given in poisonous doses and that the most powerful so-called poisons are our best remedies when given in medicinal doses. It is difficult for those who have successfully used aconitine for years to understand this antipathy.

There is one precaution which should always be given: When the symptoms are relieved and improvement becomes manifest, the remedy should gradually be withdrawn, no matter what it may be. This is particularly true of opiates. There are some nurses who will continue to give medicine regularly as prescribed, every one to two hours, no matter if the improvement is very marked. If opium is given to relieve pain, and the pain subsides, the opiate should be withdrawn. Neither the patient nor his friends is always aware that remedies should be withdrawn as symptoms subside. Consequently, it frequently happens that dose after dose of an opiate is given after there is no longer any occasion for it; for instance, after pain has subsided. Opiates given under these circumstances very frequently produce death, and it is so with all other medicines of potency. We should therefore never give an opiate for the relief of pain, particularly to children and old persons, without this injunc-

tion, and it should be made strong, that the remedy must be withdrawn just as soon as the symptoms for which it was given have been relieved. I have seen patients thoroughly narcotized, the nurses being so faithful that they would awaken the patient in order to give him an additional dose of the opium, simply because the physician ordered that a dose must be administered every one or two hours. Faithfulness to carry out instructions may sometimes prove fatal. Injunctions should always be made conditional. As improvement becomes manifest, medicines, particularly narcotics, should be given less frequently or entirely withdrawn.

DISPENSING GRANULES.

Granules are most conveniently dispensed in one-half dram glass vials, or in wooden bottles, number "oo." The former hold about one hundred and the latter about fifty granules. It is best to have the bottles labeled with the directions for the administration of the granules, and the first two or three letters of the name of the remedy employed written thereon. If arsenate of strychnine is given, ar. st. is written; if aconitine, acon.; if atropine, at., and so on. When prescribing for young children a solution is needed. In the office, three-ounce vials filled with water should always be at hand. The granules should be crushed in a mortar and dissolved in water.

If the granules contain bitter medicine a little saccharin may be added. When visiting patients at their houses a three-ounce vial may be used,

or twenty-four teaspoonfuls of water may be measured into a tumbler, and the proper number of granules dissolved in this. Always be accurate, and know how many granules are given, and in how much water they are dissolved. To throw an unknown number of granules into an unknown quantity of water, with the direction to take a teaspoonful, is criminal carelessness. From such carelessness harm to the patient must certainly follow.

Where patients, especially infants, require larger quantities of medicine than usual to afford relief, a note should be made of it; and thus, by accurately observing the dose and its effect, a large amount of useful information can be gathered.

Each standard granule represents as a rule a minimum dose for an adult, which may be repeated every half-hour or oftener. *The great majority of dosimetric granules are not poisonous,* and two or three may be given at a dose.

Aconitine and veratrine should be given only in doses of one granule until the patient's tolerance is known.

In prescribing for children the writer has found it convenient to use a three-ounce vial, or to measure twenty-four teaspoonfuls of water into a tumbler. Any other quantity of water may be used, of course, but it will be found advantageous to use a certain quantity in order that doses may be easily calculated.

If twenty-four granules are dissolved in a three-ounce vial one teaspoonful represents one granule, which ordinarily is a dose for an adult.

Doses for children are then easily calculated.

The following rule has been formulated by the writer for administering aconitine to children, and it has proved a perfectly safe rule to follow: Dissolve in twenty-four teaspoonfuls of water, one granule for each year of the patient's age, together with one additional granule. For a child of two years dissolve three granules; for a child of one year two granules; in twenty-four teaspoonfuls of water. An infant of six months or under requires only one granule in twenty-four teaspoonfuls of water. A teaspoonful of the solution may be given, usually, every hour; but in severe cases it may be given every half-hour until improvement is manifested. This rule applies only to aconitine. There are many granules, as asparagin, calcium sulphide, emetine, iron, scillitin and zinc sulphocarbolate, which require larger doses and are not poisonous medicines.

There is absolutely no reason to fear evil results from administering alkaloids according to this method. There is no safer one known, and why physicians hesitate to use alkaloids in known quantities is difficult to comprehend. If the writer were compelled to give prescriptions for active principles, which were to be filled by druggists who obtained their medicines from various manufacturers, there would necessarily be hesitancy on his part; but when he is supplied by a reliable firm, as "The Abbott Alkaloidal Company," of Chicago, whose granules are uniform in action and consequently must be accurate and pure, he feels no hesitancy in giving granules

of aconitine, digitalin, hyoscyamine and strychnine, even to the youngest infant.

The Abbott Alkaloidal Co.'s granules are even pure enough to use hypodermically, as the writer has done with glonoin, aconitine, morphine, atropine, pilocarpine, and others many times.

When rapid effects are desired, they should be dissolved in hot water and administered.

Of course, there are objections raised against dosimetry or alkaloidal medication. In the first place, because it is assumed by some to be a new system of medicine. But it is not a new system of medicine. It is stated by the late Dr. Marchal to be "a great fact." It is simply a method of administering active principles and other medicines in a perfectly safe and effective manner, according to certain rules laid down by Professor Burggræve.

Some declare that dosimetry borders on homeopathy, because little pills are used, and because the physician dispenses his own medicines in a way similar to that of homeopathic practicians. This is rather puerile, as chewing a few granules of quassin is sufficient to show that the granules really do contain something.

Others affirm that alkaloids are dangerous medicines. So they are, in the hands of the unenlightened, and so is any medicine except purely homeopathic medicine. The danger is removed by knowledge sufficient for a proper diagnosis, and by an understanding of the physiologic action of remedies.

It is urged as another objection that some of the alkaloids or active principles are not simple

bodies, and this is true. But those who prescribe them are aware of the fact. They know that digitalin and others contain several active principles.

The important question in the treatment of the sick nevertheless remains: What results are produced by the use of these medicines? These results are known and are all that can be desired. Besides, the purest active medicinal substances which chemistry can separate from plants are always used, and as soon as chemists can isolate simpler active principles they will replace the compound ones now in use.

Some objection has been very properly made to the common names given to the granules, as calomel, iron, mercury and sugar of lead, instead of the chemical names as found in the United States Dispensatory. Why these common names have been adhered to I do not now know, and have no hesitancy in saying that it would appear more in accord with scientific knowledge to use the recognized nomenclature of the authority above mentioned.

Physicians ask if patients do not object to the change from the usual method of prescription writing to the use of the granules. On the contrary, it is the experience of the writer that patients always express themselves as highly pleased with the change; not only are the granules more palatable, but patients very quickly observe that the results obtained are better and follow more speedily than formerly, and they absolutely refuse to go back to the older ways; and not only does the patient learn of the won-

derful potency and efficacy of the granules, but the physician himself is often astonished at the excellent results obtained, becomes inspired with a new enthusiasm, and awakens to the fact that he can better alleviate and cure than formerly. The writer has had years of experience in writing prescriptions, and also in dosimetry, and he has no hesitancy in saying that his results with dosimetric (alkaloidal) granules have far surpassed anything he was able to do while using cruder preparations of drugs.

HOW TO BEGIN ALKALOIDAL MEDICATION

There have been requests frequently made for short instructions for those who wish to begin Alkaloidal Medication after having practised other methods for years. The following is given and will be made as simple as possible in order that those desiring to take up this newer and superior method may do so easily and conveniently, without an apparent break in the routine of their practice. As far as the general practitioner is concerned, he must prescribe for febrile conditions more frequently than for all others combined. This includes all acute throat and lung troubles and contagious diseases which are so common among children. Probably three-fourths of the general practitioner's work therefore lies in treating the diseases of childhood, the majority of which are febrile in their nature. The great fever remedy, possibly the only really good one, is amorphous aconitine. Those who are about to start in this new field are advised to study the article on aconitine thoroughly and, if they follow its teachings, they will be able to cure the vast majority of their cases. One need not hesitate to prescribe aconitine in all febrile conditions, even to young infants. Age is no contra-indication. The only thing to be guarded

against is prescribing aconitine for delicate and feeble patients in asthenic conditions.

Many of the cases to which the physician is called present the febrile movement of only a few hours' duration and, whether this be at the beginning of the contagious disease, or pneumonia, bronchitis, or tonsillitis, the one remedy to be used is aconitine. There need be no hesitancy on the part of the physician in using it for the first time, providing fever is present. The rule for its administration is easily remembered and is as follows: 1 granule of amorphous aconitine gr. 1-134 is to be dissolved in 24 teaspoonfuls of water for each year of the patient, together with one additional granule. A teaspoonful of this mixture should be given every 15 minutes, every half-hour, or every hour, according to the degree of fever. If the temperature is 104 to 105 and the child is robust and the fever active, a teaspoonful may be given every 15 minutes until there is some improvement, then every half-hour, or every hour until the fever has entirely disappeared, at which time aconitine MUST no longer be given. To a child six months of age or under, 1 granule in 24 teaspoonfuls of water will be sufficient. One more granule may be added if the child is robust and the fever very active and high, the object generally is to give the remedy more frequently, if needed, instead of increasing the number of granules and giving the mixture at longer intervals. This, as a rule, is all that will be needed in treating any febrile movement that accompanies any of the diseases of childhood, or even of adults in acute cases.

If the disease is of the lungs and a dry irritating cough accompanies it, from 12 to 24 granules of emetine may be added to the above aconitine mixture.

If the child has deposits in its throat which resemble diphtheria, start out by giving one-tenth of a grain of calomel every half-hour until the bowels are thoroughly moved and the evacuation of a characteristic brown color, which shows that the calomel has produced its desired effect. At the same time, if the fever is high, give aconitine. From the very beginning give sulphide of calcium in as large doses as the patient can bear. One grain tablets may be used dissolved preferably in hot water. For a child one year old, four of these tablets may be dissolved in twenty-four teaspoonfuls of water, and if the child is four or five years old, eight to ten tablets may be used. The remedy is harmless and the only effect it can have is to cause vomiting which ought to be prevented, if possible, by giving doses just short of producing it.

Calcium sulphide should be pushed throughout the entire course of diphtheria as well as in all other contagious diseases of childhood. There is no remedy that produces such excellent results in such diseases. In diphtheria particularly there should be given arsenate of strychnine, grain 1-134 every three hours.

In the beginning of pneumonia, aconitine should be used, and if within two or three days the fever has not been reduced, digitalin and strychnine should be administered frequently in order to keep up the respiratory and cardiac

action. This is better than the alcoholic treatment for this condition.

If a child has been eating improperly and there should be gastro-intestinal symptoms, particularly if there is constipation (diarrhea does not contra-indicate its use) it is best to begin treatment by giving Saline Laxative. A teaspoonful of this may be dissolved in a glassful of water and, if it be an infant, a tablespoonful of this solution may be given every hour until the bowels are thoroughly moved. In older children, larger doses may be given. Follow this with copper arsenite tablets gr. 1-100, 3 in a glassful of water. A teaspoonful should be given every hour.

In summer complaint of children, or in the usual stomach and intestinal diseases of childhood, treatment should be begun by giving 1-10 of a grain of calomel every hour until it has produced a bilious looking stool. This should be followed by giving a solution of sulphocarbolates, or what is almost as good, dissolve 2 or 3 granules, 1-100 gr. of arsenite of copper in a glassful of water and give a teaspoonful every 15 or 20 minutes. If the vomiting is severe, this will be a particularly advantageous remedy.

In the treatment of croup, whether false or true, there is no remedy that will act as magically as iodized calcium. This remedy is perfectly harmless and one to three tablets, containing one-third of a grain, may be dissolved in a tablespoonful of hot water and administered every 15 or 20 minutes until the patient is relieved, which

usually occurs after three or four doses have been given. For ordinary acute hoarseness coming on after exposure to wet and cold, one of these tablets should be allowed to dissolve in the mouth every half-hour, or every hour.

For infants who are fretting and peevish, crying all the time without any apparent cause, there is no remedy that so quickly quiets this condition as one granule of Waugh's Anodyne given every half-hour until the little patient is quiet. During their first and second years, many infants, particularly those who are going through the period of teething, have crying spells, sometimes all the night through. Waugh's Anodyne should be prescribed as it meets this condition better than any other combination. Two or more granules dissolved in a spoonful of hot water, may be given in severe cases if one granule fails to give relief.

In the treatment of adults, particularly in all the febrile movements such as pneumonia, bronchitis, laryngitis, peritonitis, and even rheumatism with fever, there is no remedy that will so quickly relieve the febrile condition as amorphous aconitine, given in doses of one or two granules every half-hour. Dosimetric Trinity may take the place of aconitine very satisfactorily. By beginning treatment as early as possible in the above diseases, particularly in pneumonia, they can frequently be aborted in the course of 24 hours.

In painful affections, such as distressing and irritating coughs or intestinal colic, few remedies give better satisfaction in adults than granules of

codeine, 1-6 gr. each. In the treatment of severe and irritating coughs, where the sputum is tough and scanty, calcium sulphide tablets may be given every two hours, or more frequently, until the breath becomes saturated with the odor of sulphureted hydrogen.

In the treatment of all mental excitements or acute aberration, particularly in the treatment of delirium tremens, and in all cases of delirium where the mind is excessively active, or sleep will not come; where there is constant muscular activity, the patient talkative, restless and fidgety, and unable to keep quiet, there is no remedy that will subdue this mental and muscular excitation as quickly as hydrobromate of cicutine, 4—6 granules every two hours. This remedy takes the place of bromides.

In chronic constipation, Waugh's anticonstipation granules will be found to be superior to any combination of this kind.

In the treatment of the severe pains of dysmenorrhea, Buckley's Uterine Tonic, hyoscyamine, cicutine, macrotin, or glonoin will be found extremely useful.

Glonoin should always be one of the remedies in the physician's pocket case with which to meet all sudden heart failures and attacks of angina pectoris.

As a general tonic in all kinds of conditions requiring stimulation of the nervous and muscular systems, or as a simple appetizer, there is nothing that can take the place of arsenate of strychnine. In fact, on account of its stimulating tonic properties, it may be given in almost

any disease, used in combination with other granules. The "Triple Arsenates"—alone or with Nuclein"—will be the tonic for daily use of the Alkalometrist.

Atropine or agaricin granules are used for night sweats of phthisis.

Apocynin, 3 or 4 granules every three or four hours, is a remarkable remedy in the treatment of dropsy resulting from either heart or kidney diseases.

By the use of these few remedies, nine-tenths of all of the diseases with which the physician comes in contact, can be successfully treated. Some of the alkaloidal granules will be a constant surprise to those who begin their use, inasmuch as they produce wonderfully quick results, and are very rarely disappointing.

Surprise will be frequently manifested at the rapidity with which aconitine will reduce fevers, abort pneumonia and other inflammatory diseases; with which iodized calcium relieves croup; cicutine quiets mental and muscular excitations; calcium sulphide aborts contagious diseases; apocynin reduces dropsy; codeine relieves cough and abdominal pains, and emetine for dry cough. The writer is satisfied that a trial of just a few of these granules will certainly convince any physician of the superiority of this method over ordinary prescription writing or over the administration of fluid extracts.

The following is a list which will be of use to those who are about to begin alkalometry: Aconitine, emetine, codeine, and calcium sulphide, which will be daily used, and cicutine, glonoin,

iodized calcium, Waugh's Anodyne, copper arsenite, Waugh's Anticonstipation, strychnine arsenate, which will be used less frequently. Nuclein should not be omitted.

In the general run of cases, few medicines outside of this list will be needed. These can be added to from time to time. It is not so difficult as is generally imagined to get a start with this method. The application of aconitine in the treatment of fever will do so much towards convincing anyone of its superiority over other means that one will be eager for other cases to come up, upon which to try the above selection. There are many very agreeable surprises in them all. Your patients get well quickly and you will establish a reputation of curing disease rapidly and pleasantly.

A THERAPEUTIC GUIDE

TO

Alkaloidal—Dosimetric—Medication

CHAPTER I.

ACETANILID AND COAL-TAR DERIVATIVES.

PREPARATIONS.

Standard granules—Gr. 1-6; tablets, gr. 1 and 2½ grs.; (acetanilid and codeine compound; acetanilid comp.; (acetanilid, caffeine and camphor monobromide).

Under this head are included acetanilid or antifebrin, antipyrin and phenacetin. There are many combinations of these principal derivatives on the market, and undoubtedly many of them are composed chiefly, if not altogether, of one of the above to which some other high sounding name has been applied. As these preparations are practically of the same origin, so they have about the same medicinal effect, varying somewhat in dose. It is a mere matter of choice which one is selected for use. The writer has used acetanilid exclusively and very rarely have either of the others been prescribed or any of the many substances that have been offered as substitutes. The idea being to familiarize one's self thoroughly with one of the three, and use it singly, or, in various combinations and derive

from it all the possible benefit that can be derived from any of its class. Confining one's self to one of these remedies will certainly result in getting better results than in using all three of them.

The dose of acetanilid should not exceed eight grains, and should be given only where there is very active fever, in a strong, robust patient. Two to four grains represents the average dose, and to obtain the best results, free from danger, it is best to give two grains every two hours until there is some improvement in the case or until twelve to fourteen grains have been given.

The medicinal effect of this remedy is to reduce fever and relieve pain. When given in very large doses, or, when taken even in small doses by individuals who are susceptible to its action, it produces cyanosis, which will first manifest itself by blueness of the fingernails or of the lips, great prostration, palpitation, weak and irregular pulse, cold extremities, cold sweats, with reduction of temperature, dilatation of the pupils, in fact all the symptoms of collapse. While death has been produced by the administration of large doses, usually, the serious symptoms following the taking as much even as a dram, pass away by the administration of stimulants, hot coffee and the hypodermic injection of atropine or strychnine.

CONTRA-INDICATIONS.

These drugs should never be given in individuals who are weak, suffering from prolonged sickness, whose pulse and heart are below nor-

mal, in mental diseases or in diseases of the kidneys.

ELIMINATION.

These remedies are eliminated by the kidneys and appear in the urine about thirty minutes after their ingestion, and their elimination then continues, according to Hare, for fifty-six hours.

APPLICATION.

In all cases of excessive fever in the robust, if it is desirable and necessary to reduce fever promptly, acetanilid should be used by giving an initial dose of five grains to be followed in two hours by a similar dose. Two grains then may be given every two hours until reduction of fever, or, until there is some other favorable change in the condition of the patient. It is a safe remedy for children and may be given in one grain doses every two hours until the fever is reduced. In all cases in which it is given, the symptoms should be watched carefully, and, as soon as improvement is manifest, the remedy must be withdrawn. In case cyanosis makes its appearance, the remedy should be withdrawn entirely. The probabilities are, however, that by giving it in small doses, as has been recommended, and withdrawing it when the conditions improve, there is little or no danger of injurious effects being produced. It should not be given in typhoid fever, as a rule, except to reduce the very rapid rise of temperature, and, only for this emergency. It must not be used continuously in any disease of long duration of a depressing nature, as in typhoid fever or in tuberculosis.

INFLUENZA.

While these preparations are usually condemned in treating cases of influenza, the writer has nevertheless used acetanilid by itself, and, in combination, through several epidemics of this disease, always with the best results and without any injurious effects. The chief indication for its administration is pain. If fever is present, it will also reduce it. If the patient is strong and robust, two grain tablets of acetanilid are given every two hours. If the pain is very severe, the initial dose may be five grains. If the patient seems delicate and the heart's action weak, acetanilid compound is given in tablet form, each of which contains two grains of acetanilid, half a grain of caffeine and half a grain of monobromated camphor. This prevents any depressing effect of the acetanilid by stimulating the heart and the camphor certainly relieves many of the nervous symptoms accompanying this disease. Very rarely has it ever been found necessary to use other remedies as this one seems to have produced all desirable effects necessary.

MIGRAINE.

There are few remedies that can better relieve the severe and sickening pain of migraine than acetanilid. It can certainly abort an attack by administering two grains every two hours upon the first indications of its appearance. If the patient is delicate, acetanilid compound can be used without fear of producing depressing effects.

As an analgesic to relieve neuralgic pains, no matter where they may exist, it has certainly met with marked favor. This will apply to trifacial, ovarian neuralgia and sciatica. It is of particular benefit in lumbago or in any muscular pain. In the severe lightning pains of locomotor ataxia, five grain doses administered every two or three hours for two or three times produces relief.

PERTUSSIS.

In whooping-cough, acetanilid has been of very great value in lessening the number of the attacks and shortening the duration of the disease. To infants under six months of age, a fourth of a grain may be given every three or four hours, or 1-6 grain granules may be used, gradually increasing the dose until there is some improvement. Children evidently bear the effects of acetanilid proportionately better than do adults.

It also has abortive action as can be seen by citing the following case: A young man about 24 years of age, extremely robust, strong and hearty, was suddenly taken with a severe chill and pain in the right inguinal region, which was also tender on pressure. The pulse was 130, strong, full and bounding, temperature 104. Face was flushed and congested, every indication showing an active sthenic condition. Believing that appendicitis was about to set in, or that an abscess was forming, a large dose of ten grains of acetanilid was given, with the hope of rapidly reducing the fever. By some mistake on the part of the nurse, the dose of ten grains was re-

peated within an hour, making twenty grains within one hour. The patient was seen in about two hours after taking the last dose and presented the following condition: The face was no longer flushed, a copious perspiration had been produced, and the bed had the appearance as if a bucketful of water had been thrown over it. The temperature was 100 and the pulse 105. There were no alarming symptoms as a result of this large dose, the patient made an excellent recovery and was out of bed in two or three days. There remained only a slight tenderness in the inguinal region on pressure, for two or three days. The belief exists in the mind of the writer that this was a case of pending abscess or appendicitis, which was aborted by an excessively large dose of acetanilid unintentionally given.

LOCAL USES.

Acetanilid may be successfully used as a dusting powder in the treatment of foul and granulated ulcers, chancroids, or in the treatment of ordinary wounds in which iodoform is generally used. It has one advantage over iodoform in being free from odor. It should, however be used very sparingly in the treatment of large wounds, or, in large operations, as it is quickly absorbed, producing poisonous symptoms similar to those that have been noticed when taken internally in excessive doses. In the treatment of small ulcers, it can be simply dusted in, or, the small cavity may be completely filled with the powder.

CHAPTER II.

ACONITINE, ALKALOID.

Standard granules—Gr. 1-134, gm. .0005 amorphous; gr. 1-500, gm. .000125 amorphous; gr. 1-500, gm. .000125 crystallized.

Aconitine is an alkaloid, and represents the full medicinal property of the leaves and root of aconitum napellus.

According to Wright, the yield of aconitine is .03—.04 per cent. Two forms of aconitine are in general use, the crystalline and the amorphous. The latter is less active than the former and requires a larger amount to produce physiologic effects. The amorphous is the only kind that is used by the writer and is the only one spoken of in this article unless otherwise mentioned.

"According to Oulmount, aconitine (cryst.) displays physiologic and therapeutic action in doses of a quarter of a milligram, gr. 1-250, but may be gradually increased to 1 or even 2 milligrams (gr. 1-64—1-34) a day without injury.

In order to determine whether Abbott's granules contained an amount sufficiently large to produce physiologic effects, the writer dissolved one granule of amorphous aconitine on the tongue. At the end of three minutes a peculiar numbness was felt at that point where the granule had been allowed to dissolve. When air was drawn into the mouth a sensation of coolness

was experienced. At the end of fifteen minutes a slight numbness or feeling of heat had gradually extended into the fauces and pharynx. These sensations lasted over one hour.

If a granule is taken every half-hour in health or when not indicated in disease, until four or five have been swallowed, a decided feeling of heat or burning is experienced in the epigastrium. There are also eructations in which the taste of aconitine is recognized. If larger doses are taken or small doses are too frequently repeated, a feeling of warmth and tingling may be felt in the fingers and toes, then in the hands and feet, and finally in all parts of the body. This tingling or numbness is one of the first physiologic manifestations, and may be preceded by heat in the epigastrium.

In the treatment of acute inflammatory diseases, amorphous aconitine rarely produces tingling or numbness. The presence of fever prevents this action. It is not necessary in order to reduce fever that tingling should be produced. Nor is it at all likely that tingling of the extremities will follow the administration of amorphous aconitine, if it is given according to established rules. Whenever aconitine is prescribed to patients old enough to interpret sensations, they should be told that the medicine is likely to produce tingling of the lips, of the fingers and toes, and when this becomes manifest, they must reduce the dose or extend the time interval of taking the medicine. If this suggestion is acted upon there will be no danger of overdosing. Similar rules ought to be applied whenever any

remedy of potency is given. It is our absolute duty to know the primary physiologic actions of every drug that we use, and whenever we give it, it is also our duty to inform the patient or the nurse to withdraw it when its physiologic effects become manifest. In this way harm is not likely to occur. Whenever you exceed the physiologic dose of any medicine, it then becomes a poison.

Whenever aconitine or any other remedy is indicated, and fails to produce the desired results in the dose given, it should be pushed until its first physiologic effects are produced. Until this is done a remedy has not been given a fair trial. The best way to produce physiologic effects is not by giving large doses at long intervals, but minimum doses at short intervals. The remedy should always be given in solution to insure rapid absorption. If pills, granules, or any other solid form of medicine are given, there is always the danger of their accumulation in the stomach. Particularly if the tongue is dry and glazed, they may remain undissolved. Each dose ought to be absorbed into the circulation before succeeding doses are given. This can only be reasonably assured when granules are given in solution, otherwise, a number of doses may accumulate in the stomach until secretion is restored, when solution and absorption may occur within a short time. In this way alarming and unexplained symptoms are produced, and even the death of a patient who was showing some signs of improvement.

It may sometimes be necessary to push this

medicine until tingling is produced, especially in severe neuralgia. This primary physiologic result may be maintained, but it should not be exceeded. When it is exceeded, nausea and diarrhea follow, or in other words poisoning is produced. No danger can arise while treating fever with aconitine, if it is gradually withdrawn when such prominent symptoms as pain, restlessness, delirium, flushed face, thirst, moaning, rapid pulse and quick breathing, exist. Give the medicine frequently as long as these symptoms are marked. Then gradually reduce it as they abate and disappear. When tingling is produced, it is simply a reminder that the system is fully under the influence of aconitine. No good can follow by pushing it further, and it is not necessary or wise to continue the medicine in as large doses, or at such short intervals. This is true not only of aconitine, but of all other medicines that can produce physiologic effects. The aim should always be, to give just so much of any drug as will relieve the symptoms for which it is given, and then lessen the dose when improvement is manifest, or when primary physiologic effects are observed. If this rule were carefully carried out, poisoning by overdosing would be extremely rare.

Even aconitine can be taken in gradually increasing doses, as long as the condition or symptoms for which it is taken remains unsubdued. A lady who suffered intensely from supraorbital neuralgia, without my knowledge gradually increased the number of granules, to what might appear to be a very poisonous dose. One gran-

ule of amorphous aconitine was ordered to be taken every half hour until tingling was felt in the extremities, or until relief was obtained. At first, relief was obtained and sleep followed after several doses were taken. In subsequent attacks single granules failed to give relief, and gradually the number was increased at each attack, until I accidentally learned that as many as seven were taken at one dose. Only one such dose was necessary to relieve the pain. Even this dose failed to produce tingling, nor were there any untoward symptoms. This was simply a case of tolerance produced by the excessive pain, which prevented any physiologic effects of the drug. There was just enough to relieve pain. There was none left over, as it were, to produce other effects.

When aconitine is given to combat fevers in exact and proper doses, it cannot produce marked physiologic effects as long as there is fever upon which the aconitine acts, because febrile conditions are present which utilize and require the full medicinal force of the remedy. If larger amounts are given than are required, or where the remedy is not at all indicated, the extra quantity having nothing to combat produces such physiologic or poisonous symptoms as may become manifest. This is true of all active medicines. Physiologic effects are more easily produced where there are no symptoms or conditions present to offer resistance to the action of the remedy.

The dose of aconitine as recommended in this article has rarely produced even the slightest

physiologic symptom, that of tingling in adults. With young children, of course, there is no way of determining this fact. In one or two cases only was vomiting produced. There was pharyngitis without rise of temperature. In one adult in whom the pharynx was very raw and painful, but without fever, epigastric pains followed the swallowing of each granule. These are the only cases in which unpleasant effects were noted during a daily and extensive use of aconitine for a period of many years. Even these results would not have been produced, if aconitine had been used only when fever was present. While there are conditions that call for its use outside of fever, it is *par excellence,* the chief remedy for fever in acute inflammatory diseases. In the above cases, then, it was not indicated, there being neither fever, neuralgia nor spasmodic irritation, such as cough.

The tingling produced by this alkaloid is due to paralysis of the end-organs of the sensory nerves. By the local application of aconitine, gr. ij to the dram of lard, it is possible to very materially lessen the sensation of the skin and of the mucous membranes to which it is applied. Very severe neuralgic pains can be thus entirely relieved by making the application at the seat of pain. The precaution usually given is, to protect the finger that is to be used in the rubbing with a piece of kid, to prevent absorption.

With regard to this tingling the question that would naturally be asked is, how is it with regard to little children and infants, who cannot express themselves or indicate their sensations? In the

first place it should be remembered that tingling of the lips and extremities is rarely produced in the dosimetric treatment of acute inflammatory diseases, because of the presence of fever. Further, as acute inflammatory symptoms subside, the remedy is gradually withdrawn and too much of it cannot therefore be given. Lastly, untoward or alarming symptoms have never been witnessed by the writer, even in the treatment of infants during the first week of their existence. While there is no way by which it can be known that tingling is produced in infants, poisoning is not at all likely to be produced if a certain simple rule is followed, viz.: Withdraw the medicine as prominent symptoms subside.

As aconitine is a remedy that is now being so extensively used, physicians should be familiar, not only with its physiologic action, but with its poisonous action as well. There is a great difference between the symptoms produced by aconite and that of its alkaloid. On account of acrid substances found in the former, gastrointestinal irritation is more marked and predominates, while with the alkaloid there is more nervous depression. As fatal cases of poisoning by the alkaloid are rare, it is necessary to give in detail symptoms that have been produced by taking aconite root or some preparation of the plant.

Dilation of the pupil is always marked. There is weak, irregular pulse, subnormal temperature, embarrassed respiration, vomiting, diarrhea and sometimes bloody stools, severe epigastric and abdominal pains, great anxiety, profuse urination, muscular pains and weakness. Later, men-

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tal inactivity, vertigo, pain in all the branches of the trifacial nerve, salivation, cold, clammy skin, slight convulsions, and death finally occurs from paralysis of the muscles of respiration. Bear distinctly in mind that the above symptoms result from taking the crude drug and not from taking its alkaloid. It cannot be denied that aconitine is a powerful poison, but not more so than strychnine, arsenic, or the opiates. The dose alone determines its harmlessness or its poisonous action. In so-called alkaloid medication, poisonous doses are not prescribed.

The same cannot be said of older methods, where large, supposedly full medicinal doses are given to produce prompt action. The danger of this latter method is great, particularly when giving opiates to infants. Full medicinal doses are frequently dangerous ones.

INDICATIONS FOR THE ADMINISTRATION OF ACONITINE.

When aconitine is given in full medicinal doses in health, it lessens the pulse rate, diminishes the blood-pressure or tension and reduces body temperature. It slows respiratory movement, increases elimination from the kidneys and skin, both solids and fluids. It diminishes sensibility, induces muscular weakness and lessens reflex action.

The indications for the use of aconitine are therefore very plain. Give aconitine whenever it is desirable to produce any of the above effects. Aconitine is therefore clearly indicated when conditions exist opposite those just enumerated.

According to the above suggestions, the first set of symptoms which would call for its use, is where increased pulse rate, increased tension of blood-pressure, and increased body temperature, exist, as in all sthenic fevers. As it lessens respiratory movement those inflammatory conditions which produce increased pulmonary action, as bronchitis, pneumonia, and pleurisy, are successfully treated by means of aconitine. Its action on the skin and kidneys assists in lowering temperature and distributing and equalizing the blood and depleting it.

As it diminishes sensibility, it is useful in treating neuralgia. As it produces muscular weakness and lessens reflex action, its application is readily perceived in all exalted muscular movements, as shown by excess of motor activity, as in hypertrophy of the heart with overaction, acute maniacal delirium with full pulse.

Its action relative to the above conditions will be more fully treated later in detail.

Besides the above uses aconitine is the great jugulator of acute inflammatory diseases. Every endeavor should be made to administer it very early in acute inflammatory, and in acute infectious diseases. The presence of fever, or of those premonitory symptoms which indicate that an acute febrile disease is threatening, are sufficient reasons; no, they are the very best and only reasons why aconitine should be prescribed. The presence of acute fever, even though it is impossible to foretell what the disease will be, is the only indication that is necessary for prescribing this remedy. In all cases in which

asthenia is not present, active treatment with amorphous aconitine should be begun at once.

To give a placebo and wait until tomorrow in order to make a positive diagnosis, before beginning active treatment, is a loss of very valuable time.

The rise in temperature is ominous and may prove serious. When the human body is plainly showing by many signs, as by abnormal temperature, chilliness or rigor, headache, general lassitude, quickened pulse and respiration, that an inflammatory disease is threatening, experience cannot always tell where the general storm, which seems to be gathering in all parts of the body or at least pervades throughout the body, will finally localize its entire force. If this force is localized, congestion results, and this in turn leads to inflammation. It is our duty to attempt to prevent this general storm from localizing in a single organ or structure. If the local congestion is primary and the general symptoms as described are secondary, our effort should still be for jugulation, and the results of treatment will be the same. Congestion may be checked and the disturbed circulation will be restored to the normal. Whenever this has been done an inflammation has been prevented. Even if inflammation is present it may be checked, thus preventing its further advancement and the establishment of disease.

There is no doubt, whatever, about this, and notwithstanding the preponderance of opinion against this, acute inflammatory diseases are aborted.

It is readily understood why treatment should be begun early. Jugulation, or abortion of disease, means cutting it short. The only time to do this is, not four or five days after the disease is established, but during its incipiency. Every case which presents itself with prodromal febrile symptoms, if unchecked by nature or art, will, of necessity, terminate in disease. This should be more fully realized, and promptly acted upon. As soon as such a case presents itself, amorphous aconitine should be given, the frequency of the dose depending upon the degree of fever, and it should be pushed until some improvement is manifest.

In the majority of cases the various symptoms will gradually subside. The temperature will be restored to the normal within twenty-four hours. Those cases which could not be aborted will likely run a shorter course under aconitine than under any other treatment. This has been the writer's experience and this is his chief reason for using aconitine in the treatment of acute inflammatory diseases.

Why physicians do not generally believe in the jugulation of diseases of the inflammatory type is, because they have been wrongly taught that diseases always run their course in spite of all that can be done. Fifty years ago it was taught that blood-letting was the orthodox treatment. This has been proved to be a fallacy. Yet at that time every doctor bled his patients. Because it was right? No! But because it was the accepted treatment of that day, just as active treatment is not the generally accepted plan to-

day. The expectant plan seems to rule. This consists in treating symptoms as they arise, in nourishing the patient and in letting the disease run its course.

The use of aconitine has taught many physicians one important thing, viz.: that active interference in acute febrile diseases not only shortens their duration, but, if begun early enough, absolutely aborts them. Aconitine does this without risk to the patient. The proper use of aconitine is not accompanied by any depressing influence, and convalescence is rapid. Besides, supportive measures are carried along in conjunction with aconitine treatment. The inactive, expectant plan of treatment, has been in vogue ever since active blood-letting was condemned. One extreme followed the other. Active treatment is not always needed, but in the beginning of acute inflammatory diseases, *it is absolutely demanded,* with the distinct idea of jugulation. For this purpose amorphous aconitine is the efficient and safe remedy.

There is one thing that ought to be thoroughly understood, and that is, that patients frequently recover from many diseases without any medication whatever. This is true not only of the milder diseases, such as ordinary pharyngitis, but it is also true of pneumonia, diphtheria, scarlet fever, and in fact all diseases. This will probably account for the great virtue that is claimed to be possessed by certain remedies, nuclein for instance. Some physicians firmly believe that this will cure almost any inflammatory disease, from an ordinary sore throat to tuberculosis. It

no doubt has many virtues and does a great deal of good. No matter what medicine is used, if cure follows its administration, that medicine is given the credit of having produced the cure. It is easy enough to say that the patient would have gotten well without any medicine, but we do not know this.

There are, no doubt, many cases of inflammation accompanied by high fever which would recover without any medication whatever. Those of us who use aconitine to reduce this fever and find that our patients become well, usually in the course of 24 hours, necessarily give credit to aconitine for bringing about the change.

It is simply impossible to always tell at the beginning of a disease, that it will be a mild one and recover without any medication.

For men who are just entering into the practice it is *not* a good idea for them to work on the principle that diseases will get well of themselves, no matter if a number of them do. The older practician, whose experience has given him enough discernment to more clearly look into the case and prognosticate it, can better afford to work on this principle and give simple remedies or none, as his intelligence may dictate. It is the safest plan always, when fever accompanies an acute attack, to reduce this fever as early as possible with the sole hope of aborting the disease. The fact that the disease might get well without any medication should not preclude the giving of medicine. If medicine is intelligently prescribed, one cannot possibly do harm with it. There is no case, no matter how simple or how

desperate it may be, but that an intelligent physician can always do something to make it even milder, or to alleviate its severity.

There is evidently something about a physician's judgment that is more than reason. His opinions are formed without apparently going through the process of reasoning. He goes to a bedside, and he feels and knows that certain things are necessary to do. Certain medicines seem to him to be necessary to be given. He has not, apparently, reasoned it out himself. It comes to him instinctively and intuitively. The intelligent physician who can act under such circumstances is the one who has most success in his practice. Intuition or instinct is not wholly confined to those who cannot reason well, or who cannot reason at all. While this latter class may depend more fully upon intuition than upon deliberate reasoning, yet it is true that intuition coming from a logical mind will not lead one astray.

Intuitive knowledge plays a greater part in the daily work of successful physicians and surgeons than is at present realized.

Giving amorphous aconitine in order to successfully reduce fever and to abort acute inflammatory diseases is not intuition. It is an established fact. Those who have this daily demonstrated to their full satisfaction, think it strange that this is still a mooted question.

Probably the chief reason why acute febrile diseases are not aborted is because the effort is not made to do so. Another reason is that incipient diseases do not always come under our

observation. So then, if diseases are to be aborted, they should be seen early, and every effort should be made to abort them. They will not abort themselves. Frequently a patient starts out with every indication of having a pleurisy, a pneumonia or a peritonitis, with temperature ranging from 103 to 105 degrees. Within twenty-four hours the temperature can be reduced to normal.

At other times there is a high fever but no positive sign from which to make a diagnosis. The fever in these cases frequently disappears after aconitine treatment within one day. In both of these classes there is a good reason to believe that if treatment is delayed but a day, the termination might not be so favorable. Some of these cases are undoubtedly in their early inflammatory stage. Marked pathologic changes have not set in. Whatever organ or structure is threatened, it contains an increased supply of blood, that is, it is congested. The vasomotor nerves permit dilatation of the arterioles in the threatened organ, and an afflux of blood and exudation follow. All the remaining structures may be partially drained of their blood, while their arterioles are contracted. The equilibrium of the blood-supply is destroyed through inharmonious action of the vasomotor nervous system.

A hyperemia and exudation is produced, in one part, and probable anemia in all the remaining parts. When aconitine is administered to patients whose blood-supply is thus disturbed, a harmonious action of the disturbed vasomotor

centers is soon produced, and withdrawal of blood from the congested area follows. If a congestion is relieved, an inflammation or a disease has been prevented, by normal distribution of the blood.

While amorphous aconitine serves its best purpose and produces its most brilliant results when used early in the attack of acute inflammatory diseases, the first twenty-four or forty-eight hours, it may be given as long as fever lasts, but not so actively. The contraindications are a feeble, easily compressible pulse, embarrassed respiration, cold extremities and cold, clammy. pale skin. Digitalin, glonoin, strychnine and caffeine are the remedies for this latter class.

The diseases particularly adapted for the use of aconitine, are the many that occur among children, which constitute about three-fourths ot the general practician's work; acute coryza, pharyngitis, bronchitis and pneumonia; the febrile period of acute infectious diseases; in later life, besides those above enumerated, acute articular and acute muscular rheumatism, peritonitis general or local, metritis, in fact there is no acute disease accompanied by fever which cannot be benefited by the administration of amorphous aconitine during its early period.

If the patient is fairly strong or better, if his condition is sthenic, the presence of fever *calls* for the use of aconitine. The more sthenic the condition and the higher the fever, the more brilliant will be the results. The practice of treating every acute febrile condition by the administration of amorphous aconitine, irrespective of the

disease which produces it, seems irrational to many, or even may seem unscientific. In actual practice, however, daily experience demonstrates that it is highly proper and efficacious, and that it is free from danger when properly used.

Every physician has some one febrifuge which he uses in acute inflammatory diseases, no matter what the disease may be that produces it. It is claimed that whenever aconitine is given in acute inflammations, nothing but a symptom, fever, is being treated. Suppose this were true; the excellent results and the speedy cures that follow would surely stand as unimpeachable witnesses in favor of this remedy. When aconitine is used in the acute inflammatory diseases, it is the inflammation itself, however, that is the direct object of treatment, as the chief action of this medicine is to restore to the normal the condition of abnormal and disturbed blood-supply, and there can be no inflammation without abnormal distribution of blood.

In acute infectious diseases, while aconitine does not act on the cause, that is, the bacteria, it nevertheless reduces the fever by acting on all the secretions, and by increasing the blood-supply to the skin favors radiation of heat and elimination of harmful matter.

Many believe that fever in acute diseases is beneficial, that it is nature's method of destroying by the increased heat, the *materies morbi,* that fever should not be interfered with but allowed to continue; that if it is checked the patient's condition is likely to be made worse.

This will not bear the test of bedside demon-

stration. Whenever fever can be reduced and the normal temperature maintained, no matter what the pathologic condition may be, the disease is checked, if held in check long enough it is cured, and without detriment to the patient or delay in the convalescence. As a rule the fever of phthisis cannot be controlled, because we cannot act upon the remotely-seated and medicine-proof bacilli. If, however, the fever could be checked and the normal temperature maintained, the patient would get well. Necessarily the means employed must have acted upon the cause, upon the bacilli, either directly or indirectly. What is meant is this, when it appears that fever alone is being treated, the conditions which produce the fever are in reality being acted upon. It is almost impossible to successfully treat single symptoms of any disease without influencing in some way the pathologic condition which produces that disease.

We may not always be conscious of the fact, but treatment is very frequently employed, not against a disease, but against one symptom. That symptom is pain. Can anyone deny that the pathologic conditions which produce pain are not influenced when an opiate is given, as in pleurisy or in peritonitis? It is the pain in these diseases that demands the administration of opiates, and yet the disease which produces the pain is cured by the means employed to relieve its most prominent symptom, namely, pain.

In acute inflammatory diseases the increased temperature suggests the administration of aconitine just as pain suggests opiates. Fever is the most prominent symptom in three-fourths of the

diseases that make up the general practician's work. Reduce this increased temperature, attend to this one symptom, and if we use amorphous aconitine correctly, the disease, no matter what it may be, will in the vast majority of instances be cured. The disease itself cannot always be treated because it is frequently very obscure. That is, we really do not know just what it is. By treating the most prominent symptoms, even without knowing what the disease is, the patient is frequently cured. If it were absolutely necessary to make a positive diagnosis in every case before treatment could be begun, it would be very unfortunate for the patient.

Take the very sudden and excessive rise of temperature in acute rheumatism, which sometimes reaches 108—110 degrees. The most successful treatment for this extremely dangerous condition is the ice bath. The temperature is reduced and the patient recovers. Here it cannot be said that the rheumatism is treated as a disease, especially since even at the present day it is not known what rheumatism is, but one symptom is treated, namely, fever; and when the fever is reduced and the temperature restored to the normal, the patient becomes well. The rule in the above-mentioned cases is, that if this excessive temperature is once reduced, it remains so. It would be difficult to say how this serious complication of rheumatism could be successfully treated without apparently treating the one symptom, fever. I repeat, treat the fever which accompanies acute inflammatory diseases by means of amorphous aconitine, or ice

bath, and if the fever is reduced you must have necessarily and in reality as in the above case, treated or influenced the very structure itself that was inflamed, or the pathologic condition, which produced the disease.

Whether theories are right or wrong, this one fact will remain—your patients will get well speedily and safely. It might seem that too much prominence is given to the one symptom, fever. But the fact is, that if fever can be controlled and can be reduced at will, the disease that produces the fever is virtually under control. By keeping track of the fever alone, a very excellent and tolerably sure index is obtained of the progress of the disease. The slightest decline is favorable and may show that treatment is effective, while the slightest increase shows advancement of pathologic conditions and that the remedy used has so far failed to impress or control the disease.

Increase of fever and of the pulse-rate are usually coincident. Their decline should also be so. If fever declines and the pulse increases in frequency the conditions are unfavorable, particularly in peritonitis. The fever and pulse-rate should decline simultaneously. Better still, the pulse is first reduced, then the temperature falls. This is common when aconitine alone is employed. In peritonitis, if pain subsides, and if fever approaches the normal and the pulse remains rapid, or worse if it increases, the prognosis is very unfavorable.

Moderate increase of temperature of itself does little or no harm. The ideas of diminishing

fever, and of jugulation are not advocated because a few degrees of heat are detrimental to the organism. The pathologic condition which produces fever is the point of danger. It has been already shown that if the fever alone is apparently treated and controlled, the pathologic lesions themselves are acted upon. It will bear repeating. Treat the fever, apparently, which accompanies acute inflammatory diseases, and the diseases themselves will be cured.

It sometimes happens that amorphous aconitine has no influence whatever in checking fever or in preventing its advancement. It seems in these cases to be inert, without producing the slightest effect. There is hardly a medicine that has not a similar record. Opiates sometimes fail utterly to bring the slightest relief for the excruciating pain of cancer, which may be quickly relieved by cicutine. Quinine sometimes fails to cure malarial fever. All remedies will sometimes fail, even when they are most strongly indicated. Why, then, should not aconitine sometimes fail? When it does, there should always be a strong suspicion of sepsis. Several times when aconitine had no effect upon a high temperature within twenty-four hours, sepsis was suspected, and later it was proved to be present. Aconitine is of no value in the treatment of septicemia.

Remove the cause and the fever will disappear. Simple acute inflammations seem compelled to yield to the administration of amorphous aconitine. This is more particularly true if treatment can be begun during the first twenty-

four hours of the attack. If it should be begun even later, it may still reduce fever and lessen the duration of the disease.

ACONITINE WILL NOT REDUCE FEVER IN TWO, OR THREE, OR FOUR HOURS.

Physicians have sometimes been disappointed because a too rapid reduction of fever was expected, or because aconitine was given after inflammation was fully established, or because it was not given frequently enough, or because it was given in typhoid fever, in phthisis, or in some equally septic disease, where the medicine is not indicated. It can be given with benefit even in such cases, but it should be combined with digitalin and strychnine, as in the granule known as Dosimetric Trinity No. 1. This latter combination is an excellent one to give in those sudden attacks of fever, due to inflammation of a newly-infected area of a tuberculous lung.

From twelve to twenty-four hours is the time that is usually required for aconitine to have some reducing effect in acute fever. Often the temperature is restored to the normal within that time, and the reduction is final and complete in many cases. In other patients the fever is lowered only one or two degrees. If the rules in regard to the administration of amorphous aconitine have been followed and the fever has not been perceptibly changed within twenty-four hours, the probabilities are that the disease may run approximately its usual course. Aconitine, to be effective in fevers from 103 to 104, must be given every half-hour. It is doubtful if in the doses

as recommended in this article, any very material effect can be observed if it is given only every one or every two hours. It will have no effect if given only every two or three hours, and none need be expected.

Whenever the thermometer shows a rise of temperature in a person who has been previously well, no matter what the disease is, no matter whether a diagnosis can or cannot be made, amorphous aconitine should be prescribed. The exceptions to this rule are few. The greater number of cases met by the general practician are neither sthenic nor asthenic, but occupy a medium position between these two extremes, and this class bears aconitine well and needs it. Sthenic conditions demand it.

Asthenic conditions, in which the respiration is embarrassed and the pulse feeble, small and irregular, *should never have aconitine.*

As a rule, asthenia does not exist during the first two or three days of acute inflammatory diseases, the time especially ripe for the treatment by means of aconitine, with the one aim in view, that of aborting the attack. If all acute inflammatory diseases were actively treated by means of aconitine during their early period, asthenia would not be so prevalent nor chronic diseases so common. If no attempt is made to abort an inflammatory disease, and it is allowed to drift, it is easy to understand that inflammatory lesions will more greatly damage the tissues, and the depression of the general system will be greater than where the disease has been aborted. Jugulation prevents all this. While some chronic

diseases begin in the subacute form, many of them have their origin in acute attacks. One acute attack often predisposes to subsequent attacks. Pneumonia is frequently the forerunner of phthisis. If the effort is made to jugulate pneumonia by means of amorphous aconitine, the inflammation in many cases will be checked. The lung cannot then be so damaged beyond recovery as to prepare a nidus for the reception, cultivation and propagation of the ubiquitous tubercle bacilli. The longer any acute inflammation lasts, the greater the damage to the tissue and the greater the chances of chronicity. Make every effort to jugulate acute inflammation, and by cutting it short, chronic conditions then must often be prevented. Preventive medicine is an important feature in dosimetry.

In such diseases as diphtheria and typhoid fever, when from the very onset of the attack the prognosis seems unfavorable, strychnine and cactin should be given from the very start. This is done with the idea of preventing cardiac weakness. Liquid Peptonoids with creosote is the chief nutrient for this class. Digested liquid food in combination with an antiseptic remedy, such as creosote, should recommend itself for use in all septic diseases of the entire alimentary tract. In the vast majority of diseases it is not necessary to feed the patient very much during the first few days of the sickness. Restrict the diet. Do not give solid food. If nothing at all is taken for two or three days, it should not cause any anxiety.

Fever patients should have all the cold water

they desire. As a rule it cannot possibly do them harm. If the temperature is excessive, that is, over 105 or 106 degrees, there is nothing that will reduce such a temperature as quickly as a cold bath. Let the water be lukewarm at first and gradually cool it down to 70 degrees. If the patient shivers and his lips become blue, remove him at once and wrap him up in a warm blanket. Hot tea, coffee or hot milk, with plenty of sugar in it, will soon overcome this shivering.

The writer has never resorted to the use of alcoholics for the reduction of fever. In those inflammatory diseases which usually last less than one week, aconitine is a far better febrifuge than is alcohol.

If the physician fears the depressing action of aconitine, even if this fear exists only in his imagination and cannot possibly have any real existence, it will be more comforting to him and advisable to guard aconitine with digitalin and strychnine as in Dosimetric Trinity. In typhoid fever intestinal antiseptics are a far more rational method for the reduction of fever. In fact, they are the preventives of fever. To sustain the heart-action, strychnine and digitalin, or cactin, are the remedies that should be used. If a quick action is demanded, as in collapse or shock, hypodermic injection of glonoin or caffeine surpasses alcohol in quickness of action, as well as in prolonged action. By the addition of strychnine in doses of 1-20 of a grain, we have suggested two of the best possible heart-tonics and heart-stimulants that can be found.

Many febrile conditions are produced by over-

eating, which by overloading of the stomach and bowels leads to fermentation. The poisonous gases are absorbed, producing the fever. As a precautionary means, and in order to remove decomposing material from the intestinal tract, to freshen the mucous membrane, fitting it better for rapid absorption of medicine, it is advisable to begin the treatment of acute febrile diseases by the administration of effervescing seidlitz salts. It prepares the patient for better results medicinally, causing more rapid results.

All cases of neuralgia, particularly those of very stubborn nature and which have resisted the usual course of treatment, should be given a trial of aconitine. Aconitine, of course, will act very much better in those cases of neuralgia, particularly facial, which result from exposure to cold, wet winds. The more acute and sudden the neuralgia is, the more likely it is to yield to aconitine. The results are sometimes surprising and very quick. One granule should be given every 15 to 20 minutes in severe pain, until tingling of the fingers and lips is produced, or until the pain has subsided. In either instance the medicine should then be entirely withdrawn, or if the pain still remains it can be less frequently given, say every hour. It has frequently occurred that three or four doses of aconitine, given every 15 or 20 minutes, have relieved a neuralgia of almost any part of the body that has resisted the orthodox treatment for many weeks.

DOSE OF AMORPHOUS ACONITINE.

The following plan for the administration of aconitine in fevers, which has been deduced from

the extended personal experience of the writer, can be recommended as being perfectly safe and highly effective. Since the following method was first practised, and then first published in the author's "Guide," in 1895, the writer has had no occasion to change the dose, and now after ten years of actual daily use he adheres strictly to the rule as laid down, except in regard to infants. If failure occurs it is probably because the dose is not given frequently enough, or because the case was not seen early in its career.

One granule of aconitine amorphous gr. 1-134, is the dose for an adult and may be given every fifteen minutes, every half-hour, or every hour, according to the degree of fever. If the temperature is 103 degrees a granule of aconitine amorphous gr. 1-134, gm. .0005, should be given every half-hour. If, however, on the first day of the attack the thermometer registers from 104 to 105 degrees, the same dose should be given every fifteen minutes for four or five doses, then every half-hour. In both cases the medicine must be continued until some improvement is manifested; the same dose should then be administered every one or two hours. If the patient is comatose, the pulse strong and the skin hot and dry, one granule of aconitine may be injected subcutaneously every half-hour until the fever declines, or until he is able to swallow.

To children only a fraction of a granule should be given as a dose and this should always be administered in solution, which is made as follows: Measure into a glass twenty-four teaspoonfuls of water, or use a three-ounce vial of

water; drop into the water one granule of aconitine amorphous gr. 1-134, for each year of the patient's age, together with one additional granule; that is, for a child one year old two granules; for a child five years old six granules, etc., for all infants of six months and under, but one granule. Of this solution one teaspoonful may be given every fifteen minutes, every half-hour or every hour, according to the degree of fever or the urgency of the case. In the treatment of children, as in the treatment of adults, as soon as improvement is observed the medicine should be given less frequently. Experience has taught that infants under six months of age bear about the same sized dose.

There need be no hesitation whatever in giving babies a week old the dose as above recommended. The only point is not to give it oftener than every hour, unless the temperature is over 104. One soon learns when to add additional granules, or when to change the time interval. If the child is robust and the condition sthenic the medicine may be more frequently given than when the fever is less active. *If there are indications of cyanosis, if the skin and lips are blue, as is found in capillary bronchitis, never give aconitine.* Caffeine, digitalin and strychnine are then the remedies.

The writer has frequently given aconitine to infants a few days old, and he has never known of harm resulting to the patient. The great safeguard in the use of an alkaloid, according to the rules laid down by Burggræve is that as soon as improvement is manifested the medicine should

be withdrawn, either gradually or entirely. Gradual withdrawal is best as it prevents a return of fever. How can the attendant know when to withdraw the medicine gradually and to begin giving it at greater intervals? If the rapid breathing becomes less frequent, if the flushed face loses its redness, if the patient has been restless and delirious and becomes quiet, if thirst, lassitude and soreness disappear, if the dry hot skin and dry tongue become moist, then instead of giving aconitine so often it should be given every one or two hours. If after a time fever returns, aconitine may be given as frequently as at the beginning of the treatment. It should be remembered that generally the pulse is restored to the normal before the fever has been entirely reduced.

How long may aconitine be administered? It has been administered continuously for weeks in typhoid fever without apparent harm, but it is best to combine it with strychnine and digitalin, as it is in the preparation of the granule known as "Dosimetric Trinity." In typhoid fever it should not be given actively with the idea of breaking up the fever completely, except during the first three or four days. There are better remedies for this purpose, after the disease is established, as intestinal antiseptics, mercurials or sulphocarbolates.

Aconitine is best limited to the more acute diseases. It has a wonderful record here. The field is broad enough for it to reap for itself a title which no other febrifuge can wrest from it.

Aside from its systemic use in the treatment of

fevers, aconitine may be used to advantage in inflammations of the mucous membrane of the mouth and pharynx. For this purpose it should be given in solution, and when thus frequently administered, aconitine acts as a local anesthetic and relieves the pain which usually accompanies these diseases.

Aconitine reduces the number of respirations, and should be used, therefore, in all inflammatory diseases of the lungs, in which there is always increased respiration. There is no remedy that can cure acute diseases of the entire respiratory tract so quickly and so thoroughly as aconitine. These are also among the diseases which can be aborted. In the treatment of bronchitis, emetine and scillitin may be combined with aconitine, to modify the character of the sputum and to make expectoration easier. If cough is harassing and painful, codeine should be added.

In cases of hypertrophy of the heart, in which the contractions have become too vigorous, one or two granules of amorphous aconitine given every two hours will reduce the force of the heart.

In all inflammatory diseases of the puerperal state, as pelvic peritonitis and metritis, aconitine reduces fever with remarkable rapidity. If adynamia is present, strychnine and digitalin must be added to the aconitine. It should be remembered that there is no disease accompanied by acute attacks of fever in which aconitine may not be given with advantage. In scarlet fever, measles, diphtheria and in smallpox, aconitine and calcium sulphide are among our best remedies. In acute articular and in muscular rheumatism, in erysipe-

las and in meningitis, aconitine will give satisfaction in the reduction of fever, and consequently in the relief of pain. In the beginning of influenza when fever is high and muscular pains severe, aconitine has brought rapid relief.

In the treatment of asthenic cases with aconitine, the combination of aconitine amorphous gr. 1-134, gm. .0005; digitalin gr. 1-67, gm. .001; and strychnine arsenate gr. 1-134, gm. .0005. These three active principles are prepared in a granule known as Dosimetric Trinity No. 1. Another granule is prepared containing one-fourth of the quantity of the active principles found in No. 1, and called Dosimetric Trinity No. 2. This latter granule may be used in the treatment of diseases of children. When Dosimetric Trinity No. 1 is used in the treatment of adults, or of children, it should be given in the same dose, and according to the same method, laid down for the administration of aconitine. This granule may be given in all cases of fever, especially cases in which the patient is delicate, and the heart is feeble. When preparing Dosimetric Trinity in solution for administration to children, saccharin should be added to correct the bitterness.

In the granule known as Dosimetric Trinity, aconitine is an antipyretic, digitalin a heart-tonic and antipyretic, while strychnine is a heart, lung and nerve stimulant. The slight antagonism which exists between aconitine and digitalin is not sufficient to destroy the property of aconitine as a febrifuge, and the digitalin aids aconitine in reducing fever. The combined action of digitalin and strychnine in sustaining the heart, and

particularly the action of strychnine as a respiratory stimulant, prevent pulmonary depression.

According to Harley, death is produced in cases of poisoning by aconitine through its action upon the medulla. There is incomplete paralysis of the diaphragm and spasmodic action of the muscles attached to the upper part of the chest, but no complete muscular paralysis. The heart continues to beat after the lungs have ceased to perform their function.

Fothergill's experiments on rabbits, guinea pigs and cats, show that a lethal dose of aconitine ceases to be so if the animals have had an appropriate dose of digitalin from five to nine hours, previously. In like manner, the lethal effects of aconitine are prevented by atropine and strychnine. While aconitine kills by paralyzing the respiration, atropine and strychnine, which act powerfully on the respiratory centers, are potent to prevent death.—(Nat. Dispensatory). When aconitine is thus guarded by two such remedies as digitalin and strychnine, as in the Dosimetric Trinity, it is almost impossible for harm to follow, even though it be carelessly administered in medicinal doses. That it is efficient in reducing fever, thousands of physicians can testify, and the most skeptical must be convinced by a few trials of this combination.

Probably the most potent combination known for the reduction of fever, is formed of amorphous aconitine gr. 1-134, gm. .0005; digitalin gr. 1-67, gm. .001; veratrine gr. 1-134, gm. .0005; and is named Abbott's Defervescent Compound No. 1. There is also a granule prepared

which contains one-fourth of the quantity of medicine found in No. 1, and this is called Abbott's Defervescent Compound No. 2. Abbott's Defervescent Compound No. 1 should be used *for adults, and only in sthenic cases,* in which the heart beats forcibly, the fever is high, the patient is strong, the face congested and the arteries in the neck and temples are visibly throbbing.

In many cases of pneumonia, pleurisy, rheumatism and peritonitis, this granule will be found of great value in quieting the heart-action, and in reducing fever. One granule may be given every half-hour until improvement is manifested, after which it should be given every hour or every two hours.

That which recommends aconitine for general use, especially for the treatment of children, is not only its wonderful efficacy and safety, but that it is almost tasteless. Children take it in solution without a murmur. In fact, they are not even aware that they are taking medicine.

Frequently it is the only remedy needed. Its administration is so simple, and yet so satisfactory, that the writer feels it to be his duty to urge upon physicians, who do not dispense their own medicines, to carry with them at least some amorphous aconitine granules, and use them whenever fever is present. Physicians may feel, as did the writer when he first used this method, that one or two granules dissolved in twenty-four teaspoonfuls of water could not, when administered in teaspoonful doses, be productive of good, and much less of harm. It is doubtful if physicians

can prescribe aconitine for infants or children for the first time without a feeling of uneasiness. So many authorities utterly condemn its internal use, and even pronounce it a poison. It should be remembered that *substances are poisonous to life only when given in poisonous doses.*

But of this the practitioner may rest assured, that a few trials of this wonderful and unfortunately not fully appreciated febrifuge, will convince him that there is no remedy equal to it in reducing fevers "quickly, safely and agreeably."

CHAPTER III.

AGARICIN (GLU.)

Standard granule—Gr. 1-67, gm. .001.

Dosimetric dose—Three to six (average four) granules repeated every two to four hours as necessary.

Agaricin is the active principle of agaricus alba. It is a white, crystalline substance, and is prepared in granules which contain gr. 1-67, gm. .001. Agaricin is used solely because of its action upon the sweat glands.

Atropine has held the chief place among therapeutic agents as the best remedy to check profuse sweating, particularly the night-sweats which accompany phthisis.

Atropine, however, occasionally fails to produce the desired effect. Agaricin has lately replaced atropine, and has frequently cured the patient of sweating where atropine has proved useless. The custom is to try atropine first; if the sweating does not cease, agaricin is administered. It should be given in doses of four granules at bedtime, and if the patient is awake two granules may be given every two hours during the night. Its effects are produced in from two to six hours.

This treatment should be continued until the sweating ceases, which usually occurs during the first week.

Unfortunately, agaricin has also a cathartic action which must be carefully watched. If diarrhea is produced two granules of codeine, gr. 1-6 each, should be given with the first dose of agaricin at bedtime, or the number of granules may be diminished.

On the whole this may be considered rightfully to be the most desirable thing we possess for the condition above mentioned. The unpleasant effects often produced by atropine never follow the use of agaricin, and with the exception of producing diarrhea no evil after-effects are observed.

CHAPTER IV.

ALCOHOL.

In writing on the subject of alcohol, it might be strange that the very first statement made is that I have used it but very slightly as a medicinal agent. The question then might come up, not having had personal experience with it, why should I assume to write an article upon it.

The great antipathy I have always held against alcoholics of all kinds originated in the first observation that was made upon its hereditary effects. There are no medical substances which produce such terrible effects upon the offspring as does this alcohol. Records show that anywhere from 25 to 33 per cent of idiots now in existence are the direct offspring of drunkards; of one parent or the other, or of both of them. Anywhere from 20 to 30 per cent of insanity is produced directly through its hereditary influence. This one fact ought to be enough to condemn it as a medicine. There are no other medicines which can have the same baneful influences upon the offspring as does this particular one, alcohol.

In going through post mortem rooms and examining there the cirrhotic livers, kidneys, the inflamed and ulcerated stomachs and wet brains, it should at least cause one to reflect upon the

terrible ravages that are produced by this particular so-called medicinal agent and hesitate about prescribing it.

When we come to examine it from a social standpoint and realize that alcohol causes individuals to lose all of their wealth, changing their entire natures; making of them brutes and drunkards, it is impossible for us to realize why we should class alcohol as a medicinal substance. It is a well-known fact among physicians, and particularly surgeons, that if a confirmed alcoholic should become sick or injured his chances for recovery are very poor indeed. Let a confirmed drunkard have pneumonia or erysipelas, it usually means death; let him have any ordinary fracture or meet with a moderately serious accident, his chances for recovery are indeed slender. In these conditions alcohol lowers the vitality and the resistance. It prevents recuperation; and notwithstanding this fact we look upon alcohol as a medicine.

In extreme hot weather, when the temperature ranges up in the nineties, we find usually that the first ones to succumb to excessive heat are those who imbibe too freely of alcohol. When it becomes excessively cold, we find that those who are likely to be frozen first are those who imbibe alcohol. In the history of all important expeditions, of all forced marches, where great feats of strength and endurance are necessary, in cases where men are subject to starvation, it is always observed that the first ones to die are those who are addicted to alcoholics; and yet we still affirm that alcohol is a medicine.

A medicine is a substance which should be employed only during the time of sickness, in cases of need. We find on the contrary with regard to alcohol that it is not confined to this particular time, but that it is indulged in on all occasions.

The great objections to alcoholics are these: A remedy that is so powerful as to make a man lose possession of himself, to make a strong-willed and determined man helpless; that can so change all of the internal organism and produce such ravages in the liver, stomach, brains and kidneys as to produce death; that cannot only make the man himself insane but can also cause him to transmit nervous diseases, insanity and idiocy to his offspring, is a remedy that should be shunned and used as little as possible, and then only when medicinally indicated, and the same precautions should surround the prescribing of alcoholics as surround the prescribing of the opiates. Both of these remedies are eminently narcotics; both of them are habit-forming remedies; and the narcotic habit is very frequently formed in the sickroom, not only in regard to opiates, but also in regard to alcoholics.

It might be truthfully said that there are many men who drink only occasionally, and who seemingly never pass beyond this period. This question should then be asked: Where does the vast number of drunkards come from, if not from this particular class of moderate drinkers? There is one thing certain, if men never drank at all there would be no drunkards. The ranks of the

drunkards must be recuperated from the rank of so-called moderate drinkers.

We might say that 25 years from now, not one drunkard who is today living will be living at that time; and yet, if we were able to gather in the statistics 25 years from now, we would find that there would be as many, if not more, drunkards existing then, than there are today. Where will they come from? From the children who are living now, and who are yet to be born; from the men who today are moderate drinkers, or who do not drink at all; and so it goes on through all time.

The question might be asked, what have we as physicians to do with this particular question; what has it to do with the prescribing of alcohol? Simply this, alcohol frequently prescribed in the sick-room leads to its continuous use afterwards. There is actually no occasion to prescribe alcohol at all. In an active practice of 23 years, I can recall but very few cases where alcohol has ever been prescribed by me, and yet I feel satisfied that as great success has accompanied my treatment as that of the general run of practicians.

There are several so-called indications where some physicians deem it a necessity. One is that of a febrifuge—used solely for the reduction of fever. There are other remedies that can take its place without any danger whatever. Another indication is that it is used as a stomachic, and here is where the greatest danger lies of forming the habit. The individual who is in need of a stomachic is one who is generally able to be on

his feet and is apparently well. Alcohol in these cases is prescribed in an off-hand kind of a way as an appetizer. It undoubtedly, in small quantities, increases the flow of gastric juice and possibly aids the digestion. This is all right as far as it goes, provided it would be used only at such times and in such quantities as to produce the desired effect; but the difficulty is that patients soon get to taking larger quantities and more frequently than is absolutely necessary. There are a great many bitter tonics, particularly strychnine and quassin, that are far superior as stomachics and appetizers to alcoholics.

Another erroneous idea is that alcohol is a food; that it can sustain life: I cannot conceive of a greater error being made by a medical man than when he looks upon alcohol as a food. A food is something that will sustain life indefinitely without producing injurious results. It is doubtful if many physicians can be found who will say that alcohol is a substance which can prolong life indefinitely, and that it does not produce injurious results. The post mortem rooms are filled with diseased forms showing these injurious results.

A food is a substance which does not create the demand for an increased consumption of itself. The ordinary foods that are taken, such as bread, beefsteak and potatoes, do not create a desire for more bread, beefsteak and potatoes; a point of satiety is reached. With alcohol, however, it is different; one drink frequently creates the demand for another, and two create the de-

mand for a third, and so on until finally the individual is completely under its control. There is no natural food that has a similar property.

Nearly all foods with which we are acquainted can sustain life indefinitely without injury. For instance, in some parts of the world people live entirely upon meat alone, others live upon rice, some upon fish, and others upon fruit.

Nearly all animals sustain themselves by partaking of one particular kind of food. If alcohol were a food it ought to sustain some life indefinitely. We know very well that it cannot do so. In case of men going upon sprees, it is a well-observed fact that these men during this time will eat nothing for one or two weeks. Of course, they take alcohol in excess; yet at the end of their spree they are absolutely insane; their nervous system is wrecked; their stomach will no longer digest food, and no organ in their entire body is in its normal condition. Yet, during all of this time these men have lived upon alcohol and it has made of them sick and insane men.

In experiments tried upon dogs, feeding them solely upon beer, whisky or wine, it was found that at the end of two or three weeks these animals would die. There is nothing of a sustaining quality about alcohol when taken by itself.

If a food is needed in sickness, particularly so in typhoid fever, it should be one of the predigested foods; milk, if possible. In selecting a food for typhoid fever patients to take the place of alcoholics, I do not think that there is any-

thing better than the preparation Somatose, or Liquid Peptonoids with creosote. Unfortunately this preparation contains sherry wine to preserve it, but not in sufficient quantities to make it objectionable as an alcoholic. Not only is this latter food highly nutritious but it is eminently antiseptic. This quality is an absolute necessity, because of the well-known fact that decomposition plays a very important part in typhoid fever, and anything of an antiseptic nature, particularly when it is connected with food, is of the highest value. Not only is this Liquid Peptonoids with creosote a valuable food and antiseptic, but being already digested it is very quickly assimilated, which is a point of no mean consideration. If this preparation cannot be had, extract of beef, made according to the formula found under the article on sulphocarbolates, can be substituted. There is absolutely no necessity at all for giving alcoholics in case of typhoid fever on the supposition that it is a food, as the above substances named will replace alcohol.

When alcohol is taken at all, the first physiologic effect which it produces is that of dilating the capillaries of the skin, producing warmth. By dilating the capillaries in the brain it produces increased mental activity, easily perceived by an increased flow of thought and presumably mental activity. The eyes grow brighter for the same reason, that is, increased capillary circulation. The heart under these circumstances beats more quickly. This is the first physiologic action of alcohol.

If alcohol has any place in medicine at all, it should be prescribed in those cases where the above effects are desired to be produced, for instance, if there is any indication for increasing the heart-action alcohol should be given; if there is any indication for increasing the flow of blood into the skin by dilating the capillaries, it is at least indicated here. In cases of absolute collapse, where there is danger of the patient dying, alcohol has its place, because in collapse the skin is pale, cold and clammy. Here alcohol should produce a warmth of the skin, by driving more blood into it. It should produce a better circulation in the brain by dilating the capillaries. In cases of collapse, or of congestion, with the skin cold and clammy, there is but one object to be obtained and that is to drive the blood from internal structures to the surface. Popularly, alcohol is constantly used for this one object. When an individual feels cold or shivery a drink of alcohol will produce a feeling of warmth and of well-being, simply by driving blood into the surface. It does so, however, with this drawback: It lowers the temperature of the body.

Alcohol has been used very frequently to reduce the temperature, simply because it will drive a large amount of blood to the surface and thus produce radiation and evaporation with lowering of the temperature.

In the treatment of collapse, with cold clammy hands, feeble heart-action, there are remedies which will act quicker and which will act better, and among these are hypodermic injections of glonoin in doses of from a 1-50th to 1-25th of a

grain; atropine, in doses of 1-100th to 1-50th of a grain. These remedies act much more quickly than alcohol, and if the patient is unconscious and unable to swallow, the hypodermic method should always be used. Of course it is understood that alcohol can also be injected hypodermically, but you can hardly inject doses sufficiently large to produce the desired effect. One advantage that the alcoholics have over the above-mentioned remedies is that they are always at hand, and where glonoin or atropine cannot be found it should be used as a substitute. One should never be so biased in his opinions or so set against any particular remedy as not to use it when no other remedy is at hand. Use anything that will benefit your patient, no matter what it may be.

Whisky has a wonderful reputation in the cure of rattlesnake bites. No more so probably than it has a wonderful reputation for the cure of people who are nearly frozen to death, or when they are sunstruck, or when they have any other thing the matter with them, that is in the nature of an emergency, it seems to be the universal panacea for everything. In the case of a rattlesnake bite the poison is very virulent and death might result in the course of a few minutes to several hours. Under these circumstances it seems those unaccustomed to drinking whisky at all can take at least a half-pint or pint of it, without any injurious effects. The reason of this is that the whisky has something to combat. The snake poison is asserting

its rights on the circulation and the whisky must work against it, and in doing so it cannot have the effect upon the brain in producing drunkenness as it would in those cases where no poison is swallowed. I heartily recommend whisky in rattlesnake bites, and would not hesitate a moment to drink a pint of it if I were bitten by a rattlesnake provided, I had no other remedy at hand, such as the permanganate of potash.

One thought occurs just at this point, and that is this; it has been previously mentioned that alcohol had been looked upon as a food. It is well-known, and this fact is duplicated very frequently, that drinking a pint of whisky, or a glassful of whisky, by those who are unaccustomed to taking it, results in immediate death. It might be a good way to commit suicide by those who are not in the habit of taking whisky. A single tumblerful of it would be as sure to produce death as would the taking of several grains of strychnine, morphine or arsenic. If alcohol is a food, it seems strange that by taking it in excess, to the extent of one pint, it would produce death. It is simply impossible to find any food in general use, that can produce immediate death if the individual should take it in excess. This argument should be sufficient to exclude it entirely from the list of foods. Opium is as much a food as alcohol. Those who are addicted to its use prefer to spend their last money for opium instead of food. It is said of the Arabs that on going a long journey on horseback, where they have not sufficient time to feed their horse, they frequently give them a half

dram of opium, which will sustain them on a long and fatiguing journey and takes the place of food. It is also well-known that tobacco, which is a narcotic as well as opium and alcohol, will to a certain extent replace food and prevent one from feeling the pangs of hunger, and that one can do longer without food with tobacco than without it. So it is with all other narcotics, but we never hear of physicians prescribing tobacco or prescribing opium as a food, in cases of typhoid fever or other prolonged fevers, simply because it can take the place of food.

There can be no doubt that alcohol does produce a better feeling in those who are depressed, by increasing the mental flow. The same can be said with regard to opium, when given in physiologic doses to those who are accustomed to it. There is, however, no necessity for taking either of these remedies, simply because one feels somewhat depressed. Both of these remedies should be confined exclusively to the treatment of the sick, absolutely sick, not simply because one feels discouraged or despondent, or because one desires to be put in a better mental state for the time being. There never would be any objection raised to alcohol if it were confined strictly to the sick-room. The great objection is that it is habit-forming, and physicians should be particularly on their guard and attempt to prevent this habit-forming quality by prescribing alcoholics only in cases of emergency.

Those who do not use alcohol at all in their practice can always find some substitute for it; something will take its place and it is the duty

of every physician to find this something. Thousands of physicians are today practising medicine successfully who never prescribe it, who find no need of it, and the thought of prescribing it never enters their mind. On the other hand, no doubt the vast majority of physicians prescribe it daily. It is the remedy which is continually upon their minds and they prescribe it on all occasions whether it is necessary or not. Particularly do they prescribe it in cases where the disease is not of a serious nature, and where there is absolutely no need of it. These are the cases in which great harm is likely to be done by the habit-forming property of alcohol. For years past it seems to have been implanted in the mind of the physician that it was impossible to treat typhoid fever, pneumonia or diphtheria, without alcohol entering largely into the treatment of these diseases. It has become a kind of routine matter from which it is very difficult to break; it is prescribed thoughtlessly.

While it may be true that many of the patients for whom these alcoholics are prescribed never think of taking them after they are convalescent, it is equally true that some patients do not give up alcoholic drinks when the disease is cured.

The social part of this question should seriously attract the attention of physicians. They can no doubt exercise a powerful influence toward abating the drinking of alcohol. It is very likely that many physicians prescribe alcohol simply because their patients prefer it. Its use is so prevalent, that it is no doubt a difficult task and sometimes injurious to a physician's business to

attempt to stop his patient from drinking alcoholics to which he has been accustomed and of which he is very fond. Physicians like all other classes are compelled to a certain extent to cater to the wants of their patients, and if a physician learns that his patient is particularly fond of any alcoholic and he at the same time desires to retain the good will of his patient, he will sometimes do so by prescribing his favorite drink. This is business and business frequently overthrows all conscientious scruples in such matters.

Then, too, the physician himself is very frequently fond of indulgences in liquors, and can see no harm in social drinking, and on this account we find that he prescribes liquor more frequently than one who does not take it at all. It is no doubt an assured fact that if all physicians were teetotalers very little alcohol would ever be prescribed. So our personal ideas with regard to drink have very much to do with the quantity that is used in the sick-room.

To recapitulate, I can most decidedly and distinctly state that I have seen no cases in which alcoholics of any kind were needed. I have seen no case in which alcoholics have been prescribed by other persons where some substitute could not be given that would have produced as beneficial effects, if not better.

Alcoholics are ubiquitous; alcoholics are decidedly narcotic; there is no doubt about their power to relieve pain. This is one reason why alcoholics have been used frequently and the source from which alcoholics have become habitually used in cases of stomachic or intestinal

colic. In dysmenorrhea, many young girls suffering each month find that alcohol will relieve this pain, and why? Because it is a narcotic, as is opium. They may as well take a dose of opium, because the effect would be similar; it is in just such cases as these latter that women frequently become addicted to alcohol.

CHAPTER V.

ALOIN.

Aloin—Active principle of aloes.
Synonyms—Barbaloin, Socaloin.
Dose gr. 1-10 to grs. jj.

Physiologic effects: Aloin increases the flow of bile, stimulates peristalsis of the large bowel, and increases the amount of blood in the pelvic organs. As it is very bitter to the taste, like all remedies of this class, it improves the appetite and stimulates gastric secretion and thus improves digestion, particularly when given before meals.

The indications for its use are obvious. It is of great benefit in all cases of chronic constipation, particularly in those of sedentary habits and in women. In these cases the colon is frequently found to be loaded with hard fecal masses, which by their continued pressure and over-distention produce a sluggishness of peristalsis, which in some cases advances to paralysis. Aloin overcomes this condition by increasing intestinal secretion and by stimulating muscular contraction.

It is very materially assisted in doing so, however, by combination with strychnine and atropine, as both these alkaloids increase peristalsis. Atropine to a certain extent prevents griping which aloin may at times produce.

One advantage in using aloin instead of aloes is that it is less painful in its action. It also

requires a much smaller dose. In cases of so-called biliousness, where the tongue is coated with a thick yellow fur, loss of appetite, frontal headache, slight nausea and constipation, it proves to be a valuable remedy.

As aloin increases the blood-supply in the pelvic organs, it should not be given in acute or subacute inflammation of these parts. Aloin produces rather a mushy instead of the copious watery stool which is needed in such cases. Saline Laxative should be given the preference here. Besides, aloin is very slow in its action. It takes from six to twelve hours to produce catharsis.

In amenorrhea, where anemia is not marked, where fullness and weight are experienced in the pelvis periodically, gr. 1-4 of aloin should be given three times a day for several months, not with the object of unloading the bowels but simply to increase the pelvic circulation.

If anemia is marked, two tablets of nuclein each containing two m. should be given three times a day. This latter remedy makes blood quicker and improves the general debilitated condition of anemic girls just entering upon puberty, better than any other remedy the writer has ever tried.

It is frequently asserted that aloes produces hemorrhoids and abortion. It is also firmly denied that it does. The writer has had no personal experience to show that aloes does produce hemorrhoids or abortion.

In treating chronic constipation, which is often accompanied by foul breath, coated tongue,

frontal headache, melancholia, mental and physical depression, sallow complexion, epigastric pains, loss of appetite, Waugh's Anticonstipation granule is the very best combination for this purpose.

FORMULA:

Aloin .....gr. 1-25
Strychnine sulph .....gr. 1-500
Atropine sulph .....gr. 1-2500
Oleoresin capsicum.....gr. 1-500
Emetine .....gr. 1-500

The success of such a combination depends chiefly upon the slowness of its action. Rapid catharsis is of no benefit in chronic constipation. Steady and continuous action is what is needed, and is kept up by administering four to six granules regularly three times a day. Anticonstipation granules are given before meals. If more than one stool a day is produced, one granule less is given. A gradual reduction is made whenever the movements become too frequent, until finally they are withdrawn entirely. This may require two or three months. Best and more rapid results follow when full physiologic effects are produced at the beginning of treatment by first emptying the bowels thoroughly by means of Saline Laxative.

It is easier to restore secretion, muscular and nervous energy, when the large bowel is empty than when filled to distention. Six granules of Waugh's Anticonstipation should be given three times a day to start with, then reduce the number gradually as necessity requires. Patients

soon learn to know how many granules are needed to produce desired results. This pill is of particular value for children. It is easy to take and its action is mild. One or two pills to a child of five years or under is about the dose. Whenever it is possible, taking medicine should be made pleasant for children. A small granule is much to be preferred to castor oil or salts, provided there is no haste to produce catharsis.

CHAPTER VI.

APOCYNIN (RESINOID.)

Standard granules—Gr. 1-12, gm. .005.
Dose—Two to six granules every two or three hours.

The root of apocynum cannabinum contains two principles, apocynin, a resin-like amorphous substance, and apocynein, a yellowish glucoside. We are concerned only with apocynin.

Physiological action: This remedy is similar in many respects to digitalis, inasmuch as it strengthens enfeebled heart-action, corrects irregular pulsations, reduces the number of pulsations, contracts the arterioles, thus increasing blood-pressure and the amount of urine. It is a heart-tonic and diuretic of the highest value.

Its usefulness and application can readily be determined and understood by observing the improvement that followed its administration in a very complicated and hopeless case of albuminuria. The patient, aged 25 years, had had nephritis for two years. When the writer first saw him he was pulseless, heart-beats 96. He was unable to lie down because of dyspnea and pulsation of veins in the neck. The heart was dilated and its action was irregular. The face, legs, scrotum and abdominal walls were œdematous. Urine three pints, specific gravity 1010, bowels constipated. One granule gr. 1-12 of apocynin was given every two hours. After

twenty-four hours two granules were given every two hours. The radial pulse could now be felt and beat ninety; the pulsation of the veins of the neck was less forcible and painful. On the fourth day three granules were given every two hours. On the sixth day the pulse was forty-six. The granules were reduced to two, and on the seventh day the pulse had returned to ninety. The venous throbbing in the neck had ceased. The amount of urine was not increased until the eleventh day, when five pints were passed; the next day six, and for two days thereafter seven pints. This increased flow of urine soon reduced the scrotum to its normal size, and the legs were much softer and smaller. The bowels were at first constipated. Several days after taking apocynin they were moved two or three times within twenty-four hours. The patient's general condition improved gradually for four weeks, when uncontrollable nose-bleeding set in, from the effects of which he died.

In a number of cases of œdema of the feet and legs, occurring in the aged as a result of cardiac muscular degeneration, apocynin strengthened the pulse-beat, increased the blood-pressure and relieved the œdema by increasing the activity of the kidneys. In these cases there was no increased action of the bowels. The dose prescribed was three granules every three hours.

Apocynin is of particular value in the aged where the heart-muscles naturally become weaker, lose their tonicity and contractility. The pulse may be slow, but it is soft and easily com-

pressed. Dyspnea follows slight muscular effort; œdema of the ankles is frequently observed towards bedtime. Two or three granules of apocynin given every three or four hours will generally within several days produce marked improvement, and in time will effect a complete cure.

In all valvular lesions, where the heart-action is feeble, where it needs strengthening and toning up, apocynin will certainly prove a valuable remedy. The addition of strychnine increases very materially the power of all heart-tonics, and it can be added with benefit to this one. When large doses are given, probably one or two grains, apocynin is likely to produce emesis and diarrhea. This is a toxic effect which it is not necesary to produce.

It indicates that the dose is too large and ought to be diminished. Diuretic and heart-tonic effects can be fully produced by giving doses of one-sixth to one-half grain and generally without irritating the stomach or bowels, although it may increase the number of stools but without pain. The advantage that this remedy has over digitalis is that because of its bitterness it acts as a stomachic and thus improves the appetite and the digestion.

CHAPTER VII.

APOMORPHINE (ARTIFICIAL ALK.)

Standard granule—Gr. 1-67, gm. .001.

Dose—As an emetic, six to eight granules hypodermically; or tablets representing 1-20 to 1-10 grain may be employed. As an expectorant, two, three or four every half to one hour.

"Dose recommended by Coley—Adults 1-15—1-5 grain.

"For children under 18 months—1-50 grain.

"Two years old—1-40 grain; three years—1-35 grain; five years—1-30 grain; 8 years—1-25 grain.

"One-fifth grain should not be surpassed in any case when given hypodermically."

Apomorphine is an "artificial alkaloid," prepared by heating in a glass tube one part of morphine and twenty parts of pure hydrochloric acid. The product is subject to several purifying processes and is finally crystallized as apomorphine hydrochlorate. It contains none of the anodyne properties of morphine.

Apomorphine is prepared in granules which contain gr. 1-67, gm. .001. Its properties are those of an emetic, expectorant and relaxant.

Physiologic Action: "The physiologic action of apomorphine as an emetic may be gathered from its symptomatology, which is as follows: The administration of 1-10 grain hypodermically is followed in scarcely one-half minute by fullness

of the head, the pulse is quickened and increased in volume; the pupils slowly dilate; the face is flushed. Perspiration soon appears; the respirations become more frequent and the heart-beats more rapid and before two minutes elapse emesis is produced. Then comes the reaction, a general relaxation lasting about an hour. The eyes are sunken, the pupils are widely dilated and the face is pallid and drawn. Yawning inaugurates the period of recovery; sleep follows and upon awakening all effects have passed away."—W. D. Carter.)

Very little nausea accompanies the emesis and the stomach evacuates its contents in two or three efforts. Except in cases in which patients manifest marked susceptibility to the action of apomorphine, depression does not usually follow its administration.

In an adult suffering from bronchitis death was produced by the hypodermic injection of 1-15 of a grain of apomorphine. This amount is considered to be a safe dose and it would not prove fatal except in cases of debility or in those persons who possess an idiosyncrasy against its use.

In spite of the fact that apomorphine has produced serious results in several cases, it is still regarded, when injected subcutaneously, as a gentle, safe and rapidly acting emetic.

This remedy does not produce emesis as does sulphate of zinc or sulphate of copper, by irritating the mucous membrane of the stomach, but by its action upon the spinal nerve-centers.

"That its operation does not result from elim-

ination through the gastric mucous membrane is proved by the fact that intravenous injection is followed by vomiting, in animals whose aortæ have been previously ligated, so that no apomorphine could be conveyed to the stomach."—(Nichols.)

This remedy should be given, therefore, when an emetic is indicated in inflammatory diseases of the stomach. Apomorphine is chiefly used, however, in cases of poisoning, especially when narcotics have been taken in lethal doses and coma has been produced.

The inability to swallow, because of the coma, calls for some rapidly acting and effective emetic which can be given hypodermically. This remedy is also of great value when suicide has been attempted by taking poison and the person refuses to take an antidote.

If the hypodermic use of apomorphine were solely confined to the treatment of cases of poisoning, alarming symptoms and death would rarely result from its use. But when it is given in cases of capillary bronchitis, which generally occur in infants and in the aged, a class of patients usually unable to offer much resistance, great depression and collapse may be expected in feeble patients. In capillary bronchitis the internal administration of apomorphine, combined with various other remedies, as caffeine and strychnine, is not only more efficacious than the hypodermic use but freer from harmful results.

When apomorphine is given hypodermically, from one-fifteenth to one-fifth of a grain is the usual dose, which may be repeated at the end of

twenty minutes if no effect has been produced. It is always advisable to have at hand a few tablets of apomorphine for hypodermic use in cases of poisoning. Those physicians who practise in places where medicines are not quickly obtained and where stomach-pumps are rare, should be particularly careful to be provided in this way.

ANTIDOTE FOR STRYCHNINE POISONING.

J. S. Horsely reports a case of strychnine poisoning, in which doses of about 1-12 of a grain of apomorphine not only controlled the convulsions but eventually cured the case. The same gentleman reports cases of spasms in children which were also cured by injections of apomorphine.

In hysterical crisis or boisterous drunkenness, when mental or muscular exaltation or excitement exists, where relaxation of either brain or muscle actively is desired, 1-10 gr. usually brings about the desired results. Repeat the dose in one-half hour if necessary.

Not only is apomorphine an efficient emetic but it also proved to be an excellent expectorant. When administered in small doses, frequently repeated, it increases the secretions of the mucous membrane of the entire respiratory tract. This remedy is indicated, therefore, in all cases in which the cough is dry or the sputum is tough. It is of especial value in two dreaded diseases, in acute laryngitis and in capillary bronchitis. The writer had never found a satisfactory remedy in the treatment of this latter dis-

ease until he began to use apomorphine; since which time he no longer dreads to meet this formidable enemy. Success in the treatment of capillary bronchitis depends upon the frequent administration of small dose of apomorphine, together with strychnine, throughout the course of the disease. Large doses are not recommended. Strychnine is given to stimulate the vital functions and to prevent paralysis.

The danger in capillary bronchitis is carbonic acid gas poisoning, followed by paralysis. By the early use of strychnine the nerve-centers of respiration and of cardiac movement are stimulated, so as to resist, for a time at least, carbonic acid poisoning.

Meanwhile apomorphine, which has also been given in conjunction with strychnine, causes a bronchial secretion to be formed, that not only loosens the plugs of tenacious material which are occluding the bronchioles, but by the exudation of this thin secretion depletes the swollen mucous membrane. The obstruction is removed and again air passes freely into the alveoli; this permits oxidation of hemoglobin and elimination of carbonic acid gas.

Strychnine also aids the expectorant quality of apomorphine by increasing the irritability and contractility of those muscles which have as a part of their function the expulsion of mucus; and it also improves the tone of the entire muscular system. The more debilitated the patient, whether infantile or aged, the more urgent is the demand for strychnine.

It is absolutely wrong to wait before admin-

istering strychnine until symptoms of paralysis appear, as manifested by the abdominal muscles, at their attachment to the costal cartilages, being drawn in during each inspiration. It is our duty to determine, if possible, the dangerous tendencies of every disease, and, by the administration of properly selected remedies, to strive to prevent them.

To wait until dangerous symptoms appear is an irreparable loss of valuble time. Experience should teach us that certain tendencies are likely to occur during the course of certain diseases. It seems reasonable that, if we fortify the patient properly against these harmful tendencies, they must be only slightly injurious or may be completely averted.

Not only in capillary bronchitis but in the bronchitis of the larger tubes, apomorphine is a valuable remedy. It may be given even to debilitated phthisical patients. If a stimulating action is required, monobromated camphor may be given in conjunction with apomorphine; if an anodyne action is required to relieve painful and harassing cough, codeine and apomorphine make an excellent combination.

In the treatment of croup, apomorphine is an excellent remedy. The dry, harsh cough and the accompanying dyspnea are relieved without the necessity of producing nausea or vomiting. As suggested by Dr. Abbott, apomorphine, hyoscyamine and strychnine form an excellent combination, from which good results may be obtained.

Formerly, when urgent symptoms were mani-

fested in croup, turpeth mineral was the sheet anchor of the physician. Now, apomorphine in small doses, repeated every fifteen minutes, brings relief gradually, surely and harmlessly. Can we say as much of turpeth mineral?

To illustrate the efficacy of apomorphine, the following case of croup is given. The patient was a boy of five years. Besides the constant croupy cough, there were marked dyspnea and restlessness, the pulse was 160, the temperature was 103 degrees and the respirations were 58. The treatment was as follows:

Thirty-six granules of apomorphine and six granules of Dosimetric Trinity No. 1, were dissolved in twenty-four teaspoonfuls of water. Of this mixture, one teaspoonful was ordered to be given every fifteen minutes until the breathing became easier, after which the same amount was to be given every half-hour. The patient was seen again six hours later, and was found to be in the following condition: The temperature was 100 degrees, the pulse was 150 and stronger than before, the respirations were 42. The medicine was ordered to be given every hour. Improvement continued, and within a few days the patient was well. In another severe case of laryngitis, which occurred during an attack of measles, in the case of a boy of seven years, intubation was thought necessary, but postponed, and apomorphine, in doses of gr. 1-48, was ordered every fifteen minutes. Improvement began after several doses had been given, the cough grew looser, the breathing became easier and remained so during the continuance of the measles.

When apomorphine is indicated in inflammatory diseases of the bronchi and fever is present, aconitine should always be given in combination with it. If cough is troublesome and is not reduced by the increased flow of mucus, codeine or hyoscyamine may be given with apomorphine.

When a solution of apomorphine is first made it is perfectly clear; after awhile, however, it becomes green from oxidation, but this does not interfere with its excellent expectorant qualities. In all diseases of the respiratory tract, where ipecacuanha or its active principle, emetine, is indicated, this remedy may be used with better results and without dangerous consequences.

The dose of apomorphine, as an expectorant, for adults, is three or four granules every half-hour or every hour.

A child of six years old readily bears one granule, so that in preparing a solution, twenty-four granules may be dissolved in twenty-four teaspoonfuls of water.

For children four to six years, dissolve 32 granules in twenty-four teaspoonfuls of water.

For a child of two years, dissolve 24 granules in twenty-four teaspoonfuls of water.

For a child of one year, dissolve 20 granules in twenty-four teaspoonfuls of water.

An infant may be given one-half teaspoonful of the solution prepared for the one-year-old child. If improvement does not follow within three to five hours the dose in each case should be increased.

PRECAUTIONS.

As apomorphine is depressing in its action, the same rule should guide its administration as naturally guides the administration of all remedies of its class. Great caution should be exercised when giving it to feeble patients. In fact, better not give it at all where great feebleness is manifested, in capillary bronchitis of the very young or aged.

In cases of apomorphine poisoning, the best antidote is large doses of strychnine, hypodermically given, in adults from 1-15 to 1-20 of a grain; or 5 grains of caffeine citrate, hypodermically; or large quantities of hot coffee internally, together with the application of external heat.

CHAPTER VIII.

ARBUTIN, ASPARAGIN, BAROSMIN.

Standard granule—Gr. 1-67, gm. .001.
Dose—4—6 granules every two hours.

Arbutin, asparagin, barosmin and other remedies used in cystitis and in incontinence of urine.

Arbutin.—Glucoside obtained from uva ursi, non-poisonous, can be given in one-half dram doses without bad effects.

Asparagin.—A crystallizable organic principle prepared chiefly from the common garden asparagus. Non-poisonous.

Dose—Six granules every two hours.

The part of the plant which is very frequently and erroneously used in domestic practice is the root.

While this contains glucose, extractives and other constituents, it contains little or no asparagin.

Barosmin, resinoid from Buchu, standard granule—gr. 1-6, gm. .01, non-poisonous.

Liquid extract of Rhus aromatica.

Dose—5—20 drops.

Tincture of cantharides.

Dose—1—15 drops.

Atropine sulphate, standard granule—gr. 1-500.

1—2 granules every two hours. Increase until it produces physiologic effects.

Hyoscyamine amorphous, standard granule—gr. 1-250.

1—2 granules every two hours. Increase until it produces physiologic effects.

Strychnine arsenate, standard granule—gr. 1-134.

1—6 granules every three hours.

Codeine sulphate, standard granule—gr. 1-12.

1—4 granules every two hours, for pain.

For Children—Codeine sulphate, standard granule—gr. 1-67.

1—2 granules every two or three hours.

Benzoic acid, ammonium, sodium or lithium benzoate, 5—30 grains.

Sodium bicarbonate 10—20 grains every two hours.

Plenty of water should be taken in all bladder affections except in incontinence.

In the treatment of some conditions there are medicines that are essentially valuable, but for one symptom of the disease, and cannot be used advantageously for anything else.

So it is in cystitis, which frequently shows itself in nothing but an irritable bladder — frequent desire to urinate, with more or less painful contractions of the muscular coats involving also the perineal and abdominal muscles, accompanied by chilly or shivering sensations passing from the neck of the bladder up the spine. There may be a decided burning or scalding sensation along the urethra. In acute inflammation there may be severe constant pain behind the pubis, which is greatly intensified by the muscular contractions.

The muscular coats of all hollow viscera usually partake of inflammation of the adjacent

mucous membrane. The contractions of inflamed muscles are the chief cause of the intense pain experienced during the expulsion of usually small quantities of urine.

Whenever there is pain, relieve it, always striving, however, to remove the cause. The remedies generally used to relieve pain, blunt hyperesthesia of the mucous membrane and also subdue muscular spasms, by which means the disease itself is greatly controlled, and if controlled long enough a cure is effected.

Granules of codeine sulphate gr. 1-6 and hyoscyamine gr. 1-250 form a combination which generally affords relief, when pushed to full physiologic effects. That is, until the mouth and throat are dry. Two to three granules of each every hour; and when painful and annoying conditions subside give the same dose every two or three hours. If pain continues, and the above dose gives no relief, increase the number of granules. When the more acute and annoying symptoms subside, treat conditions as they arise.

If there is rise of temperature, give amorphous aconitine granules as in any case of fever, and when the fever subsides discontinue their use.

A very useful adjuvant when fever is present, is the administration of effervescing Saline Laxative, a teaspoonful every three or four hours until the bowels are freely moved.

The urine should be examined with regard to its chemical reaction. If it is decidedly acid, 10 to 20 grains of sodium bicarbonate in a glassful of water should be given every two hours.

Potash salts are, however, better suited for

this purpose, in doses of 10 to 20 grains in a glassful of water every two or three hours, of either potassium acetate or potassium citrate.

In ammoniacal or alkaline urine, benzoate of ammonium in doses from 10 to 30 grains, highly diluted, usually gives very satisfactory results. The condition known as irritability of the bladder accompanied by frequent or constant desire to urinate, is greatly relieved by this remedy.

In catarrhal conditions where large quantities of mucus are deposited when urine is allowed to stand, where buchu and uva ursi were formerly used, give 3—6 granules of barosmin every two hours, or arbutin 3 granules every two hours, or asparagin 4 granules every two hours.

When usual remedies fail in chronic cases, particularly if there is an enlarged prostate, 1-2 drop of tincture of cantharides every three hours often brings relief.

Salol in 5—10 grain doses is an excellent remedy, and probably one of the best internal medicines to render the urine and urinary tract aseptic.

It should be remembered that nearly all medicines which enter the blood are eliminated in a greater or less extent by the kidneys and that this local action plays an important part in the treatment of diseases of the mucous membrane of the entire urinary tract.

The highly beneficial and curative effects of injecting into the bladder weak solutions of astringents and antiseptics must never be lost sight of if internal medication fails to bring relief.

INCONTINENCE.

In incontinence, nocturnal or diurnal, it is best to first seek the cause.

The rule, unfortunately, with many physicians is to first give well-tried remedies, and if these fail, then an examination is made. Seek the cause immediately.

Arbutin is frequently given in one large dose of 15 to 30 grains at bedtime. Better effects, however, are obtained by giving 4—6 granules every two hours, keeping up the treatment for weeks in chronic forms of cystitis.

With this remedy, as with many others, small doses stimulate the diseased mucous glands to better action, changing the quantity and quality of mucus, while larger doses increase the action of the glands and irritate them. It must not be forgotten that mucous glands eliminate those medicines which cure diseases of the mucous membranes. In other words medicines pass through the glands. It is the function of these mucous glands to separate medicines from the blood and pass them into the hollow viscera they line. They can handle small amounts in some instances; if the amount is increased the gland has too much work to perform, and injurious effects are produced. Arbutin is one of this class, and small doses are more effective than large ones.

In beginning the treatment be sure to make a thorough external examination of the prepuce either of the glans penis or of the clitoris. If adhesions exist, break them up with a probe and by manual force — do not cut or circumcise.

Look for fissures of the anus, and for phimosis. Satisfy yourself that the patient is free from worms, rectal irritation or constipation, inflammation or disorders of the genital organs, vesical and renal calculus, masturbation. If the above conditions as well as apparent reflex actions can be eliminated, the treatment then settles down to directing medicines to the hyperesthesia of the mucous membrane of the bladder, to lack of contractility and tonicity of the sphincter of the bladder, or to exalted activity of the muscular coats of the bladder.

In other words, in the latter case an inharmonious action exists between the sphincter and the muscular coats of the bladder.

To overcome this condition in children, strychnine arsenate, in granules gr. 1-134, is the best remedy. The remedy should be pushed and gradually increased until some beneficial effects are produced. Give one granule every three hours for several days, then one every two hours. If no effects are produced, give two every four hours, then every three hours, later every two hours. Two or three days should elapse before changing the dose.

In nocturnal incontinence, atropine sulphate is a remarkable remedy.

To children give the granules containing 1-500 grain. A favorite plan is to give the remedy night and morning.

Begin with one granule, after a few days give two, then three, four, five, gradually increasing the dose in this way until dilation of the pupils, or redness of the face with dryness of the mouth

and throat are produced. Push the medicine until full physiologic effects are shown, or until some improvement is manifest. After the physiologic dose has been ascertained, maintain it for a week, then gradually reduce it.

Probably the best results obtained from any single medicine in the general run of cases has been from administering liquid extract of Rhus aromatica. The following dose is recommended by Adler:

5—10 minims for children 2—5 years old.
10—15 minims for children 5—10 years old.
15—20 minims for older children.

The writer has obtained better results from this medicine than from all others. The principal question is the dose — and keeping it up five or six weeks. Whatever remedy is used must be persistently employed for several weeks before it can be said to have been thoroughly tried.

There is no doubt that malnutrition is a cause of incontinence. Improve the hygienic surroundings and administer such tonics as syr. iodide of iron and strychnine or Triple Arsenates with Nuclein.

Congestion of the nervous centers, and so-called general nervousness, manifested by restlessness, is another cause of incontinence.

Whatever may be wrong, correct the wrong. Put the patient in a normal condition. To show what strange and remote reflex actions may cause this complaint I quote the following from Sajous' Annual:

"A boy, long treated in vain for enuresis, had a calculus removed from his nose, the nucleus of which proved to be a boot button, then recalled as having been thrust into the nose eight years before. The removal was followed by immediate and permanent cure of incontinence."

In connection with all medical treatment the following auxiliary and useful means should be employed:

The child should sleep on a hard mattress; the foot of the bed should be elevated; fluids should not be given at or after supper.

The patient should be awakened one-half hour or an hour after sleeping and made to urinate. It is best to do this several times during the night, if the parents are awake, and particularly early in the morning, one hour or so before the usual waking time of the child.

Cold sponging of the lumbar region and of the perineum should also be employed.

Bed-wetting is frequently cured by the application of the faradic current; by dilating the urethra with metallic bougies.

Because a case proves difficult to cure, do not under any circumstances say that the child will outgrow it. Every case can be alleviated or cured. Look somewhere for the cause. Try medicines or remedies weeks at a time. Don't give up, even if no improvement is manifest in one or two weeks. It may take months.

Don't allow a child to be whipped for wetting the bed, as they often are. They can't help it. It is a diseased condition which is frequently

made worse by the belief that the little patient will outgrow it, and while the mother is waiting months and years for a cure in this way, nature is establishing chronicity and a bad habit which grows worse with time. So that large children and even adults are affected with an annoying and humiliating condition, that might have been cured if treatment had been early applied as well as perseveringly.

CHAPTER IX.

ARSENIC.

List of Standard Granules of Arsenous Acid in combination with various bases—Arsenous acid, gr. 1-67, gm. .001; arsenic bromide, gr. 1-67, gm. .001; arsenic iodide, gr. 1-67, gm. .001; arsenic sulphide, gr. 1-67, gm. .001; copper arsenite, gr. 1-1000 and gr. 1-250; iron arsenate, gr. 1-67 and gr. 1-6; potassium arsenate, gr. 1-67, gm. .001; quinine arsenate, gr. 1-6 and gr. 1-67; strychnine arsenate, gr. 1-134—1-67—1-30; sodium arsenate, gr. 1-67.

Another standard preparation is Fowler's Solution or Liquor Potassii Arsenitis. Dose M. ij—x. Each minim represents about 1-100 grain of arsenic.

In selecting a suitable combination of arsenic to meet a particular case one should be guided wholly by the peculiarity of each case, and fit the remedy to that condition, and not prescribe arsenous acid for every one needing arsenic. Each combination undoubtedly has its own indications. In epilepsy or other nervous conditions arsenic bromide is naturally adapted. In syphilis, in scrofula, with simply enlarged or with caseous glands—in phthisis with caseous nodules or deposits, arsenic iodide is most suitable. Arsenic sulphide for skin diseases. Quinine arsenate for malarial complications—and a wonderful combination it is—while strychnine arsenate is undoubtedly the best general tonic we possess.

Strychnine arsenate contains 59.2 per cent of strychnine and 40.8 per cent of arsenic.

Quinine arsenate contains 60.2 per cent of quinine and 24.4 per cent of arsenic.

Iron arsenate 30 per cent of iron and 50 per cent of arsenic.

Arsenic is an extremely severe, irritating poison, only, however, when given in poisonous doses. Therapeutically administered, keeping within physiological limits, it becomes a very useful medicine. It is eminently and chiefly reconstructive and therapeutically it has been fittingly classed as the twin brother of iron. Each may replace the other. They are synergistic. Both are used principally in reconstructing the blood, and are therefore both applicable either singly or in combination in a large number of conditions which result from, or which produce impoverished blood. Diminution in the number of red corpuscles necessarily causes a corresponding loss in the quantity of haemoglobin, but the haemoglobin may be greatly diminished while the number of red corpuscles remain about normal. This can be determined only by chemical and microscopical examination of the blood and this should be done in all severe cases.

Anemia manifests itself first in paleness. In the severer forms, as in chlorosis, there is a greenish pallor, while in pernicious anemia, the peculiar and characteristic lemon-colored skin is pathognomonic. In leucocythemia there is a dead, soggy white. With the above changes in the complexion as the most prominent symptom, as a clue only, the cause of the blood change must

be eagerly sought for. Eliminate such diseases as produce hemorrhages. Septic diseases, which sometimes within a few hours dissolve the red corpuscles and destroy haemoglobin, as in diphtheria, cancer, phthisis and malaria. Frequently the facts settle down to simple anemia without any apparent disease or cause. Here evidently the nervous system is at fault. It cannot stimulate the blood centers to make red corpuscles or haemoglobin.

Sometimes the digestive system cannot utilize the iron taken in the food nor can it be properly assimilated. With average food enough iron is taken daily to more than counterbalance the iron excreted. If this iron is not appropriated, the blood becomes poor because of the daily excess of excretion of iron. The nervous system is lacking in power to properly stimulate digestion, assimilation and appropriation and, perhaps, iron is not delayed in the blood long enough. It is hurried out too rapidly. Even with proper food containing sufficient iron, the red marrow of the flat bones may not be capable of making blood corpuscles through lack of nerve stimulation.

Every function is carried on through the action of some nerve center, and when this function is abnormal, the nerve center must be medicinally acted upon or in some other way stimulated. If the stimulation is already too great, showing excessive action, prohibitory action must be produced.

Arsenic stimulates the centers which control blood making. It stimulates the secretions of

the gastro-intestinal canal and improves thereby the digestion. In stimulating digestion and improving secretions it must necessarily stimulate the cells of the gastric glands, of the glands of Lieberkuhn and of Brunner, and it does so through action upon the nerve centers. This action may be brought about by arsenic circulating through the nerve center and irritating or stimulating it by actual contact with the group of nerve cells which make up the nerve center. Or the center may be reflexly stimulated through secretory cells as the arsenic is eliminated from the blood by the various glands. The actual presence of arsenic in the protoplasm of secretory cells, as it is taken from the lymph, is sufficient to increase glandular secretion. Many medicines act upon glandular structures, because the cells take, by selective affinity, those medicines from the blood, which in passing through the cells, stimulate them to secrete.

Cells without nerve connection could no more be stimulated to secrete than could an electrode transmit electricity when not properly connected with some generator of electricity.

Arsenic also acts beneficially on the respiratory mucous membrane in a similar manner, namely, by stimulating secretion, and is useful in chronic diseases of that membrane.

As arsenic is a reconstructive agent, building up the blood, and stimulating cellular activity, it necessarily has a large range of usefulness in many cases of debility accompanied by or produced by anemia. With many physicians it is customary to first prescribe iron for anemia, no

matter what the cause, and in many cases the results are good. Sometimes iron utterly fails, particularly in the severer forms, then arsenic very frequently cures.

Anemia is a condition which may bring about neuralgia, pain at top of head or in the temples, palpitation, vertigo, syncope, dyspnea and indigestion. It produces mental dullness as well as mental and muscular debility, amenorrhea and scanty menstruation. Very few functions can be normal if the blood is deteriorated. If anemia exists, and besides this there is any very prominent symptom as neuralgia or any of those above mentioned, the probabilities are that by correcting the anemia, the other symptoms will clear up. Arsenic and iron are the remedies used either singly or jointly, as in Fowler's solution—granules or arsenate of sodium or of arsenate of iron.

It is sometimes a good plan, from which excellent results are derived, to treat the most prominent symptom, then many concomitant ones disappear as the prominent one is gradually alleviated and cured. We say a patient is anemic, she can't make blood, why is it so? We cannot always tell. Innumerable symptoms accompany this anemia and are dependent upon it.

Arsenic and iron frequently cure the anemia. The pale, bloodless lips grow red, and the accompanying symptoms are thus also frequently cured.

The pathological condition which produced the anemia is not always apparent. The patient is debilitated, no appetite, no energy, always tired.

She is given a tonic, together with some advice about food, exercise and fresh air, all of which are tonics, and improvement is the result.

Among the poor, improper food and generally bad hygienic surroundings are sufficient to produce anemia. Here a complete change of surroundings with plenty of food is the cure.

Tonics are either reconstructive, stimulants, or energizers.

Reconstructives supply a salt, as iron or phosphates. Foods necessarily are the best reconstructives as they contain all chemicals, both organic and inorganic, needed and normally found in the body. But sometimes foods fail to effect proper synthesis, circulation may be poor, and secretions defective. General muscular tone, absorption, assimilation and appropriation are all below par. This general lowering of the vitality may be dependent upon some one particular thing, which is not always discernible.

Fortunately, there are general tonics which meet these general abnormal conditions, as arsenic, iron and strychnine, which are stimulants to the nervous system, which in its turn stimulates secretion or muscular action, giving tone and snap to tired tissues.

Arsenic cures many diseases of the nervous system, chiefly, because, many of these diseases depend upon impoverished blood.

CHOREA.

Arsenic has well earned the title of "a specific" in the treatment of chorea. One is almost absolutely certain that this disease will yield to ar-

senic, and one great regret is that many other diseases have not corresponding specifics.

Fowler's solution has long been the particular and favorite preparation. Three to five drops should be given three times a day after meals for one week, then gradually increase the dose one drop a day until some physiological effects are manifest, unless, some improvement is noticed in the meantime. The dose should not be increased if choreic movements diminish.

The first physiological effect to manifest itself is puffiness of the lower eyelids, noticeable most particularly on arising in the morning. This should be the physiological limit. When this point is passed, gastro-intestinal symptoms manifest themselves, "slight burning or colicky pains in the epigastrium, nausea, diarrhea, and if the dose be sufficiently large, vomiting, purging and generalized abdominal pain." Gastro-intestinal symptoms may be produced first if the initial doses are too large.

Arsenic, like many other medicines, has two or more effects, depending upon the size of the dose. In small quantities it stimulates, in large doses it irritates and destroys. Therefore, when giving arsenic, care must be taken to keep within its stimulating property. In order not to exceed it, and produce its poisonous action, instructions should be given, that when puffiness of the lower eyelids, stomachic or abdominal pains, nausea or diarrhea occur, the remedy should be withdrawn, or the dose reduced.

While arsenic in small doses stimulates the nervous system, it is a well known fact that

long continued and gradually increasing doses, may produce paralysis, neurites and accompanying herpes, tingling of the fingers, formication, headache, giddiness, and muscular tremors. This double effect is also particularly noticeable in the gastro-intestinal canal. Small doses increase the flow of gastric juice and improve the digestion, while large doses act as a very violent irritant, producing severe pain, diarrhea and vomiting.

Arsenic in large doses is eliminated by the kidneys which begins almost immediately after its administration and increases the urinary secretion. In small medicinal doses no arsenic is found in the urine. In large, continued doses it produces albuminuria. In poisonous doses it produces suppression of urine.

When morphia is hypodermically administered, it is excreted into the stomach and, by washing out that organ, it can easily be detected. When arsenic is introduced into the rectum, it also is found in the stomach even before it appears in the urine.

Arsenic is eliminated by the bronchial and intestinal mucous membrane as well as by the gastric. Also by the liver, lachrymal and salivary glands and skin. Any gland or structure that eliminates medicine from the blood, can necessarily be stimulated by that medicine to increased activity, and in diseased conditions of these glands or structures, may be utilized to alleviate or effect a cure. Hence in asthma and in phthisis, where bronchial diseases are concomitant, arsenic plays an important role, first by acting di-

rectly upon the bronchial mucous membrane and secondly by improving the general tone of the system.

The fact that the skin eliminates it, is the reason why some skin diseases are cured by taking arsenic. Pigmentation, eruption, burning and itching of the skin, sometimes follows its prolonged administration, showing conclusively that the functions of the skin are irritated beyond their physiological limit, and cellular activity is increased. In the medicinal administration for the cure of skin diseases, just so much should be given as will gently stimulate or change abnormal tegumentary functions. This results in normal action and effects a cure. Too much stimulation leads to irritation, which is abnormal, and leads to disease.

As with this medicine, so with many others, physiological doses stimulate and cure, which when passed beyond this point, irritation is produced which means disease. The dose which stimulates and the one which irritates is regulated, not by any fixed rule in fractions, but by the peculiarities, temperament and various circumstances connected with each patient. The amount which cures is the proper dose and this varies greatly in many instances from that set down in the table of dosage.

If arsenic is given in large doses, or in doses so frequently repeated that it cannot be as quickly eliminated, it accumulates in the liver and can be found there after death. In case, however, an individual lives ten or twelve days after the last dose has been taken, no arsenic is

likely to be found, it all having been eliminated. Taylor says the amount required to produce death in the adult is from two to four grains. Poisonous results follow much more quickly when the stomach is empty.

Teaspoonful doses of arsenous acid have been taken without producing serious results simply because of the irritation produced by such large doses resulting in vomiting.

ARSENATES IN CHOLERA INFANTUM.

It is astonishing what excellent and rapid results are obtained by the administration of minute doses of arsenite of copper in the treatment of acute gastro-intestinal diseases of infancy.

The severest cases of cholera infantum frequently show signs of improvement after several doses have been given. It is of particular value where the vomiting is severe.

Two or three tablets of arsenite of copper gr. 1-100 each, are dissolved in 1-2 glass of water and one teaspoonful is given every fifteen to twenty minutes until some improvement is manifest. After which, the same dose is given every one or two hours, then every three or four hours, and then gradually stopped as the child improves.

CHRONIC DISEASES.

In chronic diseases, such as phthisis, malaria, neuralgia, asthma, chronic psoriasis, eczema, except in the moist form, and pemphigus are sometimes greatly benefited by giving Fowler's Solution. Beginning with two or three drops in 1-2 glassful of water after meals, and gradually in-

creasing the dose until eight or ten drops are administered, care being used during its administration to carefully watch its effects and, if conditions are made worse, reduce the dose, which must be kept within the limit and continued for several weeks or even months.

MALARIA.

Quinine is looked upon as a specific for malaria, but sometimes it fails utterly to be of benefit. This is particularly true when enlarged spleen is present. Here arsenic in large doses is the proper remedy combined with quinine as in the granule, quinine arsenate gr. 1-6, given in conjunction with granules of iron arsenate. Arsenic is of more service in chronic forms than in the acute.

ARSENIC IN CANCER.

It seems strange that attempts to cure cancer by means of local applications should have almost entirely drifted into the hands of advertising quacks. From this it may be inferred that the method is valueless, and is used solely for pecuniary gain. While the latter may be largely so, yet nevertheless it is a fact that local applications can cure cancer. 'Tis true that students received very little encouragement in this direction in the lecture room, and medical literature is as silent on this subject as is the lecture room.

Because quacks have so largely monopolized this method, and have interested themselves so much in the welfare of cancer patients, is, no doubt, one reason why the regular profession

apparently takes such little interest in these cases.

The treatment of the sick logically belongs not only to the legally qualified but to professionally recognized physicians, only, however, so long as they show an interest in their patients, and are anxious to give them the benefit of their skill and some assurance of hope. In proportion as physicians fail in these reasonable and just demands, do they compel patients to seek assistance of those who show extreme interest and anxiety in the patient's welfare, let the motive be what it will.

There is a very natural shrinking from the knife, and cancer quacks offer relief without it. The knife is usually and justly advocated by the surgeon. Late statistics by Watson Cheyne show in 111 operations a cure of 34 per cent. These are inoperable cases, however, and even with the operable conditions many patients will not submit to the knife. These cases must not be abandoned. They should interest the surgeon just as much as cutting cases. He should study carefully every means that offers the least hope, principally for the benefit of the patient personally, incidentally to prevent them from drifting into the hands of quacks.

Simply because quacks use local applications in the treatment of cancer, should not deter the physician from using the same means. If he uses them he does not make a quack of himself, or in anyway even remotely connect himself with the quack.

The first question to decide is, can cancer be

cured by means of local applications? There are too many authentic cures to dispute this. Possibly in every locality there are known cures, many of which were performed by quacks. As humiliating as it may be, we must acknowledge the truth that quacks sometimes cure; and if quacks can do so, there can be no doubt that physicians can do so even more frequently if they will but try, because of their superior general and even special knowledge and skill.

Inspire confidence, believe in your own ability, then your actions, your manner of speech, your determination to do and dare cautiously, will, like an infection, inoculate others, with however a manifold belief in your ability, greater than even you yourself can ever hope to possess.

The chief reason why quacks thrive is that they inspire hope. They made positive assertions backed by apparently honest testimonials. No matter if they are all false, they are presented in such a way as to carry conviction with them. These patients are looking for hope and nothing that savors of the least uncertainty will do for them. They are not, therefore, paying for knowledge or skill, for the quack is not likely to be closely identified with either. They pay for the hope he gives them and they usually pay well for it.

The quack does not have any secret remedy or even combination of medicines not known to the medical profession. The only advantage that the quack has over the physician is his boldness, possibly in some instances downright gall. To put it more politely, self-assurance.

What is necessary to successfully cure cancer by local remedies? A knowledge of the medicines used. You already have this. All then that is needed is to go ahead and use them. If your first cases are mild ones and the locality of the cancer favorable, you will be proportionally successful. Select favorable cases, if possible. First impressions obtained by using medicines are difficult to eradicate, whether they are favorable or unfavorable.

A certain proportion of cancer cases will get well. Some will be temporarily checked and symptoms ameliorated. Some will continue to grow worse without at all being benefited, just as in all generally fatal diseases. Without medical or surgical interference, unless some other sickness sets in, cancer may be conceded to be fatal. This very fact should determine the surgeon more than ever to interfere always. If the knife is impossible, then use local applications. Some cases are cured and many others can be if the trial is made.

REMEDIES USED.

The first class of remedies that will be considered for the purpose of destroying cancer are escharotics. There are but two that are worthy of consideration, arsenic and chloride of zinc.

A number of formulæ that have been used extensively will be given, not so much for the purpose of recommending them, but simply to show what is used. Some of the combinations have been and are now being successfully used by cancer doctors. Arsenic will be first considered, then chloride of zinc.

HEBER'S CANCER PASTE.

Take of—White Arsenic.....dr. 1
Gum Kino .....oz. 1
Cinnabar .....oz. 1
Hydrastis Canadensis.....dr. 2

Make the above ingredients into a paste with simple ointment composed of white wax and olive oil. Apply a thinly spread layer to the cancerous surface for twenty-four hours, or it may be rubbed on an eruptive surface once in twenty-four hours. If the cancer is large or covers considerable surface, the application should be premised by preparing the system by giving sesquioxide of iron in full doses for a few days to counteract the effect of arsenic upon the system.—From *"Secret Nostrums"—"The House We Live In."*

Superficial cancers and tumors under various names which tend to ulceration, including lupus, continue to be occasionally treated by means of arsenical caustics. Esmarch, in the treatment of desperate cases too far gone for the use of the knife, employed arsenic both internally and externally, the former because the medicine is supposed to promote the disintegration of albuminous compounds. For the latter purpose he applied a powder compound of one part each of arsenous acid and sulphate of morphine, 8 parts of calomel, and 48 parts of powdered gum arabic. The powder was thickly strewn over the ulcer or wound every day, its action was powerfully escharotic, but painless, and it neutralized the fetor of the sore.

Kaposi, after Heber, employs a paste composed as follows: Arsenous acid gr. x, fictitious cinnabar 1-2 dram, rose water ointment 1-2 oz. "The healthy skin is not in the least affected by it, not even excoriated, while each individual lupus nodule is invariably and thoroughly destroyed." Laboulbene removed epithelial tumors without severe pain by means of two parts of arsenous acid, 6 parts of sulphide of mercury, and 12 parts of burnt sponge, mixed and reduced by means of water to a paste.—*Nat. Dispensary.*

CANCER PASTES.

Take of arsenic, sulphur, zinc sulphate and Rochelle salts, of each equal parts. Add yolk of egg till of the consistency of paste; bake with slow heat until dry, and then pulverize. When desired for use, mix again with egg and apply as paste or on cloth.—*Med. and Surg. Reporter.*

Marden's paste: Two drams arsenous acid, one dram mucilage of gum acacia. A thick layer spread over the entire ulceration and allowed to dry. As soon as inflammation is marked, slippery elm poultices should be applied until it subsides. In the course of a few days the scab comes away entirely leaving a healthy granulating surface.

To arrive at the accurate and true action of a medicine in the treatment of disease, it must be used alone, and free from combination with other active medicines. All extraneous adjuvants should be eliminated until simplicity itself is reached.

Acting upon this idea the following formula

and explanation is presented as the best of the arsenic ones. It is quoted in full because of the simplicity and lucidity of its language.

"The radical cure of epithelioma by arsenous acid. Arsenic in powder proving abortive, a solution of arsenous acid in equal parts of rectified spirit and water of the strength of one part of the acid to 150 of the menstruum employed. The first step is to thoroughly cleanse the sore by vigorously rubbing or scraping the raw surface, a moderate quantity of blood being allowed to flow. The surface of the ulcer is then thoroughly moistened with the solution, shaken up before using; and allowed to dry, preferably without dressing of any kind. A scab forms, over which the solution is applied daily. The margins of the scab tend to separate from the subjacent tissues; the treatment is continued until the scab is only retained in place by a few loose adhesions. These are divided, the scab removed, and a fresh application of the arsenical solution is made. If on the following day the resulting scab is thin, of a light yellow color, it indicates that the tissues no longer comprise any trace of cancerous growth. If, on the other hand, a dark colored, firm and closely adherent scab again forms, the whole treatment must be repeated. The thicker the resulting scab, the more energetic should be the treatment; that is to say, the stronger should be the solution, the strength of which may then be increased from 1 in 150 to 1 in 100 or even 1 in 80. When the desired result has been attained, there remains a granulating wound, covered with a delicate, white pel-

licle, to be dealt with on general principles."—Czerny and Trueck.

When a scab has formed which is firmly adherent and shows little sign of detaching itself, warm slippery elm or flaxseed poultices may be applied for several days.

With regard to cancerous nodules without ulceration, if inoperable and favorably situated, an ulceration may be produced immediately over the tumor by applying fly blisters; after which arsenic is applied to this ulceration. The nearer the nodule is to the surface, the better the chances of success. Of course, there is danger of poisoning when arsenic is applied to a raw cancerous surface. This is the exception, however.

If one objects to arsenic because of the danger of poisoning, chloride of zinc may be used without apprehension of danger from its absorption, while it appears even more efficacious than arsenic.

Chloride of zinc enters even more frequently into cancer prescriptions than arsenic, and some of the most famous cancer prescriptions contain it in combination with many substances, which of themselves have no direct influence upon cancer, yet are useful in healing obstinate ulcerations.

The following formulæ are given to show the variety of combinations and exactly what enters into "cancer cures."

Take of chloride of zinc, pulverized bloodroot, flour, equal parts each, and moisten with aromatic sulphuric acid; and it is sure.

I use another which will remove lupoids nicely;

but notwithstanding it is simple it is much more severe than the former. I drain off the white of an egg, then place the yolk in a common mortar, stir into it all the chloride of sodium I can, and grind it to a thorough paste. This is guaranteed to draw a man out of his boots. I use these frequently and always with success. Remember it is not "what we like, but when, where, and how." I am sure all doctors can use these just as well as cancer doctors.—F. B. Brewer, M. D., in *Chicago Med. Times.—Secret Nostrums.*

CANCER PASTE.

The last number of your journal contained an inquiry as to how paste to cure cancer is made. I will tell you how I have made it for the last twenty-three years. Take equal parts (by weight) of chloride of zinc, pulverized bloodroot, and wheat flour; mix well, add enough water to form a paste; spread the paste just the size of the sore on a rag and apply. Put olive oil around the ulcer before applying in order to protect the sound tissue. Leave the paste on as long as the patient can bear it. Then remove and if convenient apply a mild poultice or salve. In six or eight days the cancer will come out; if it leaves a smooth and healthy surface, all is well; if not, repeat the application until all diseased tissue is removed. This has never failed me, but remember that many so-called cancers are not cancers at all. Then again, some are so malignant that this paste and all others will not cure, but all the cases I have had for twenty-three years were healed. One that I have on hand now, on the

lower lip of a man thirty-four years old, is stubborn, but I hope it will finally yield.—Jer. Hess, M. D., in *Med. World.—Secret Nostrums.*

ANOTHER.

Take of zinc chloride.....gr. 5
Alum pulv .....gr. 5
Acid tannic .....gr. 2
Iron persulphate .....gr. 3
Glycerine sufficient quantity for paste.

Mix, apply as paste or plaster.—W. N. Sherman, M. D., *Med. World.—Secret Nostrums.*

ANOTHER.

Dr. J. B. Goodwin of Stockton, Tenn., sends the following which he thinks came from a quack:

Take chloride zinc, pulverized bloodroot, flour, equal parts of each. Mix and make plaster. Encircle the cancer with adhesive plaster, spread the paste on a cloth and apply.—*Med. World.—Secret Nostrums.*

DR. FELL'S CANCER SALVE.

Take of zinc chloride .....gr. 8
Pulv. sanguinaria rad .....gr. 6
Starch .....gr. 8

Mix. Apply on a piece of kid or leather.—*Secret Nostrums.*

FORMULA OF DR. LANDOLFE OF NAPLES.

Take of zinc chloride.....dr. 1
Gold chloride .....dr. 1
Antimony chloride .....dr. 1
Bromine chloride .....dr. 1

Flour and water sufficient to form thick paste. Spread on linen and apply to ulcerated surface.

CANCER PASTE OF ITINERANTS.

Take of zinc chloride.....dr. 1
Flour .....dr. 3
Water .....sufficient.
Make into paste.—*Secret Nostrums.*

LOMBARD'S SECRET CANCER REMEDIES.

Dr. J. L. Horr says in *Boston Medical and Surgical Journal:* Having without solicitation on my part become possessed of the knowledge of the "secret remedies" employed by the late famous "cancer doctor" of Maine, I feel it my privilege, as a member of a scientific profession that has only for its object the advancement of knowledge and the relief of suffering, to make a simple statement of the remedies and methods which were employed in the so-called "treatment of cancer."

The remedy employed, if the cancer was small, was the inspissated juice of the leaves of the phytolacca decandra (garget) which was applied in the form of a plaster until sloughing took place. The after-treatment was some simple dressing like simple cerate.

If the tumor had obtained considerable size, Dr. Lombard first used a paste composed of chloride of zinc and pulverized sanguinaria chloride until an eschar was produced, and then the same plaster as before was applied until the mass sloughed away. The knowledge of these remedies was given to me by Dr. Lombard him-

self while I was attending him during his last illness and a few days before his death.—*Secret Nostrums.*

The above formulæ and the various combinations show that zinc will by itself do all that any of the combinations can do. When a caustic is mixed with any bland vehicle it is rendered milder, and its full effects are not obtained. A more accurate way is to use the zinc alone according to Cooke, who saturated lint in the deliquescent salt and applied the dried lint to the cancerous ulcer. If this seems too strong, mix one part of chloride of zinc with one or two parts of water. Saturate gauze with this solution and pack it into the ulcer, or simply brush it thoroughly into all parts of the ulcer without any dressing whatever. This is preferable as its action can be better observed and regulated.

No matter what strength is used, it should be thoroughly applied and inspected each day. If any part still shows a tendency to continue ulceration, repeat the application, using even the deliquescent salt in those places which refuse to be checked, until the entire mass shows healthy granulations.

The application is painful, possibly not as much so as arsenic. To forestall this pain, a hypodermic injection of morphine should be given, and continued as long as the pain is unbearable.

It is a poor plan to add opiates to these local applications. It is impossible to know how much of the application will be used or how much of the opiate may be absorbed. When

opiates are given, see that all that is intended should enter the circulation. Do not depend upon an uncertain amount applied with the hope that enough may be absorbed to relieve pain. If severe pain is to be relieved, give enough opiates internally to do so.

After chloride of zinc is applied the ulceration is soon covered with a tough, dry scab, which separates in from five to fifteen days, leaving a clean, healthy, granulating surface which cicatrizes rapidly. If after the scab separates there are still places which show progressive ulceration, brush these spots over with the deliquescent salt. If this application does not produce healthy granulation, apply another when the scab comes away.

The fact that arteries and veins, even large ones, are visible in the cancerous ulceration, need not deter one from using zinc chloride even in its pure state, because it contracts and shrivels them and prevents hemorrhage. This is a great advantage that zinc possesses over the knife. A surgeon might hesitate to use a knife in the vicinity of a net-work of large blood-vessels, and possibly he could not make as clean a dissection, whereas chloride of zinc penetrates beyond the surface of the ulceration and no danger is likely to result from opening up blood-vessels.

Even uterine cancer can be thus successfully treated. First thoroughly curette the ulcer, and after bleeding has ceased, or even before that, as zinc is a hemostatic, its application will check bleeding more rapidly than if left to stop by itself. The deliquescent salt, or one part of zinc

to one or two parts of water, may be applied on tampons and held in place from four to five hours.

It is necessary to be cautious about destroying so much tissue as to produce rectal or vesical fistula. Use weaker solutions in such cases and do not permit such long contact. If the cancer is in the body of the uterus, occlusion may be prevented by the use of bougies.

There is a greater feeling of safety when zinc is used than when arsenic is used, because of the possibility of poisoning by arsenic. While zinc seems to be even more efficacious, it should be given the preference always. If it fails, arsenic can then be tried.

The internal administration of arsenic is no doubt a useful adjunct and should not be omitted from the general treatment.

For the relief of pain, the opiates are usually looked upon as superior to other anodynes; but cicutine (conium) hydrobromate, Abbott's, in 1-15 to 1-10 grain every two or three hours, has shown its superiority over morphine in relieving cancer pains. This remedy can be obtained in granules each containing 1-67 grain, from 4 to 6 being a dose. The granules are more convenient to handle and the dose more likely to be accurate and constant, than when prescribed for in the ordinary way.

HOW TO TREAT PATIENTS AND FRIENDS.

Do not mislead the friends of the cancer patient. Tell them cancer, without interference is generally fatal, but that many cases, even des-

perate ones, are sometimes cured by local means. If the case is not too far gone, if there is a glimmer of hope, give the patient the benefit of it. Tell her you will do all that medicine backed by science can do. That there is always hope as long as the patient has strength and hope, and a determination to get well, and is willing to let you try. There is no case too desperate to handle, and such patients, on account of their bravery, should receive from the physician his utmost skill, energy and attention, for one reason among others, that is, to prevent her getting into the hands of unmerciful quacks. Inspire her with all the hope your conscience will allow, and then stick to her and do the best that can possibly be done by anyone.

When arsenic or chloride of zinc is used, it destroys the cancer-forming property of that tissue in which the disease exists. If all of the cancerous-forming element is destroyed, whether that element is increased cellular activity instigated by germs or by something else, matters little, a cure is produced. Surgeons believe that if they can successfully remove all cancerous tissue a cure will generally be effected, which naturally leads to the inference that cancer is local. At any rate, arsenic and zinc destroy the rodent quality of cancerous ulceration, which latter is transformed into a healthy granulating surface which proceeds to cicatrization under favorable circumstances. The smaller the ulceration, the slower the growth, and the locality being favorable, the chances for cure are propor-

tionately great as these circumstances are favorable.

Report all of your cases, failures as well as cures, to medical societies and in medical journals. Be exact in giving full details so that everyone may understand the treatment. Take every advantage that the profession of today allows in properly and ethically advertising your cases. You are doing it for the sake of humanity, for your profession as well as yourself. And last but not least, your efforts will prevent this class from drifting into the hands of cancer quacks. If you have courage and push, and above all present your results properly before the profession, you will soon receive patients from other physicians who prefer not to handle cancer.

NEURALGIA.

Arsenic is pre-eminently a neuralgic remedy. The majority of neuralgias are benefited or cured by its administration, and it is a good plan to combine it with other medicines used.

Facial and intercostal neuralgias are more particularly amenable to its therapeutical action than other forms. It may be because they are most frequently found associated with malaria.

In the treatment of all forms of neuralgia, it may be necessary to push the remedy, as sometimes large doses are required to produce a cure. Begin with quinia arsenate gr. 1-6 every two hours; continue it for a week. If there is no improvement, give two granules gr. 1-6 every two hours and add two granules of Rhus Tox to each

dose. Fowler's Solution may be given, beginning with three drops after each meal, increase it gradually until six to eight drops are given. Reduce the dose if pain ceases or unpleasant effects are produced.

ARSENIC IN STOMACH DISEASES.

As arsenic in large doses is so violent an irritant and yet in irritating forms of gastric indigestion, manifested by a red-pointed tongue, in chronic gastric catarrh of drunkards, with vomiting of mucus, in ulceration with pain, when pain and distress follow eating, all which conditions indicate inflammation, it seems strange that one drop doses of Fowler's Solution before meals, relieves and cures. In large doses, a deadly poison, but in small doses, a gentle stimulant to diseased mucous membranes.

It is sufficiently stimulating in these diseases to act directly upon the protoplasm of the cells lining the gastric tubules, not only to produce a new growth of cells, but also to improve and increase the flow of gastric juice.

ACUTE POISONING.

Arsenic is frequently used for both suicidal and homicidal purposes and for the latter purpose both by acute and by chronic administration, therefore it is necessary to be able to promptly treat this serious condition.

It is not possible to diagnose acute arsenic poisoning from symptoms alone as they are very similar to those produced by other irritating poisons as well as those of cholera morbus. Unless the circumstances and conditions are known,

the only way to accurately diagnose arsenic poisoning is by chemical analysis.

"The following are the symptoms of the gastro-intestinal form of acute arsenical poison: Burning at the epigastrium and radiating thence over the abdomen; violent and uncontrollable vomiting, great dryness of the mouth and fauces; intense thirst; intestinal irritation, bloody and offensive stools; retracted abdomen; stranguary, priapism, suppression of urine and bloody urine, and in females menorrhagia; rapid and feeble action of the heart; oppressed breathing; great agitation and restlessness, shrunken features; cold breath; involuntary evacuations; collapse—consciousness being retained to the last. In the cerebral form of acute poisoning, without any symptoms of gastro-intestinal irritation, the patient is suddenly put into a condition of profound insensibility and coma, not unlike extreme opium narcosis."—Bartholow.

In order to present this subject in its most possibly lucid form, even at the risk of repeating, the writer quotes from Sajou's article on arsenic found in the Annual and Analytical Cyclopedia of Practical Medicine, 1898, page 489, Vol. 1.

Acute poisoning is evidenced in from one-half to three-fourths of an hour by intense burning pain in the œsophagus and stomach, rapidly becoming general over the entire abdomen; an acrid, metallic taste; violent vomiting and purging; excessive thirst; suppression of the urine; collapse; convulsions or coma, and death in from five to twenty hours.

In smaller toxic doses the symptoms are less

pronounced and death may not occur for six days.

In some cases profound and rapid collapse without pain has occurred; in others rapidly developing coma, which may be mistaken for cholera. Absence of epidemic and history should eliminate the latter.

As illustrated by the Robinson family (in which, with criminal intent, eight persons were poisoned with arsenic in five years) it is impossible to tell from the symptoms that we are dealing with a case of arsenical poisoning. Certainty can only be reached by a chemical examination, or proof that the poison has been taken into the system. A. F. Holt (*Boston Medical and Surgical Journal,* Aug. 1, '89).

Arsenical poisoning in children attending a Christmas party. Symptoms finally traced to the burning of candles which were found to contain Scheele's green. (*Medical Record,* March 30, '89).

Many cases of poisoning have been reported as a result of external application of arsenic. Introduction into the vagina has also caused death.

Death of a woman, aged 53, suffering with cancer, probably from the application of an arsenical plaster to the breast. A positive case also recorded as occuring in 1883, where an arsenical plaster applied to a tumor caused death. C. A. Cameron (*British Medical Journal,* July 26, '90).

Case of a servant girl, 25 years old, who committed suicide by introducing white arsenic into

her vagina. The quantity found in the vaginal canal amounted to nearly six grains; in the internal organs one-half grain arsenous acid was found. Deceased had not been pregnant. Haberda (*Wiener klin. Woch.,* No. 9, March 4, '97).

Although the system can easily tolerate gradually increased doses, chronic arsenical poisoning is not of infrequent occurrence from various causes.

Record of twenty-six cases of chronic arsenical poisoning from wall-paper. Especial attention called to the frequent occurrence of albuminuria. James Putman (*Boston Medical and Surgical Journal,* March 7, '89).

A case of poisoning from the use of an arsenical ointment given in the treatment of skin disease. During four months the entire amount used was calculated to be equivalent to twenty grains of arsenous acid. R. Krehl (*Archiv. f. klin. Medicin,* vol. iv, No. 44, '89).

Six cases in which jaundice was present in chronic arsenical poisoning. A. Freer (*British Medical Journal,* Aug. 1, '89).

Case of a patient, aged 50, who had for about twenty years taken one-half to two-third grain of arsenate of sodium daily. On increasing the dose he suffered from all the symptoms of arsenical poisoning. Inclination to think that the symptoms were due to a peripheral neuritis. Mathieu (*Le Prog. Med.,* vol. i, p. 244, '94).

Arsenic enters largely into the composition of various articles of domestic economy and was at one time a constant constituent of colored wall-paper. It is often added to common candles to

give them a wax-like appearance. It is used in the binding of books, and the dust which collects on the top of the book-cases in libraries often contains considerable quantities of arsenic. It is a frequent constituent of the outside wrapper in which cigarettes and tobaccos are sold, and it is also used in coloring carpets, advertising cards, playing-cards, India-rubber balls, dolls and children's toys, artificial flowers, sweets, hat-linings, gloves, and a number of other substances. There is an impression that arsenic is a common ingredient of the "face powder;" although zinc, bismuth, and lead are often present, arsenic is uniformly absent.—(Murrell).

A preliminary report as to the presence of arsenic in cigarette-wrappers. Out of seventeen series of different kinds of cigarettes and tobacco; arsenic was present in the labels of six, or more than a third. The arsenic in these cases was present in such large quantities that no difficulty was experienced in demonstrating the fact. Suggestion that, as the inhalation of arsenous acid, even in minute quantities, for a considerable time produces cough, haemoptysis, expectoration, and loss of flesh, which are readily mistaken for phthisis, the advantage of accurate knowledge concerning this subject is most apparent. Murrell and Hale (*British Medical Journal*, July 11, '96).

TREATMENT OF POISONING.

For the acute form the most effective antidote is the hydrated oxide of iron and magnesia, prepared by precipitating the solution of tersulphate

of iron by magnesia. Twenty grains of the antidote should be given for every grain of arsenic ingested.

"A solution of dialyzed iron which is already prepared, the tincture of the chloride, or Monsell's solution, may be substituted in emergencies.

"An emetic should be given, or the stomach emptied by the pump, and, if the bowels have not moved, a dose of castor-oil or Epsom salts should be administered.

"Demulcent drinks should be freely given, together with stimulation, external dry heat, and friction. Other treatment must be governed by the symptoms as they arise. Opium for pain, and large draughts of water if there be a tendency to suppression of urine are also indicated.

"In chronic arsenical poisoning the patient should naturally be removed from contact with the offending agent and treated symtomatically. Potassium iodide is the most effective agent in such cases."—*Sajous Annual.*

CHAPTER X.

ATROPINE.

Standard Granules—Gr. 1-250, gm. .00025.
Gr. 1-500, gm. .000125.
Dose 1—4 for adults of the 1-250 gr. granule.

Hypodermically in urgent cases 1-60, 1-30, or even 1-20 gr. For children under one year, begin with 1-1000 gr. and gradually increase if necessary. Dissolve six granules, 1-250 grain each, in 24 teaspoonfuls of water. Each teaspoonful represents 1-1000 of a grain.

Dissolve 12 granules 1-250 grain each in 24 teaspoonfuls of water. Each teaspoonful represents 1-500 of a grain.

The increase may be made by adding one or two extra granules to the original number after two or three days' trial if no improvement or physiologic effects are manifest.

Children of five years of age and upward may begin with 1-500 of a grain, gradually increasing if necessary.

For urgent conditions in infants of one year, as in cholera infantum, 1-200 grain hypodermically, guarded by 1-100 grain of morphine.

Indications by Symptoms: Urgent—When the skin is pale, cold and clammy; or dark from venous congestion, when the pulse at the same time is feeble, easily compressed, and when the respiration is faltering and feeble; when the pu-

pils are contracted and the temperature subnormal.

The above conditions are found in collapse from operations, chloroform poisoning, cholera, cholera morbus, cholera infantum, sunstroke, hemorrhages, "heart-failure," and internal congestions.

Contraindications—Dry hot skin, dilated pupils, scanty secretions, full bounding pulse and strong respiratory movements.

Atropine is the principal alkaloid of atropa belladonna. The sulphate is the only form mentioned in this article.

There is an apparent movement on foot to consider atropine and hyoscyamine as identical. While medicinally their effects are in some ways similar, atropine, is without doubt, the stronger. It is more powerful, abrupt and harsher in its effect.

Atropine is much more poisonous, while hyoscyamine is mild and gentle in its action and as a rule it can effectually replace atropine except in urgent cases, such as collapse and shock, where quick and prompt action is necessary.

In prescribing atropine, as in prescribing all other remedies, it is absolutely essential to know its physiological actions. Success cannot follow the use of atropine in the treatment of diseases unless the physician knows that it checks secretions, that it relaxes spasmodic contractions of the voluntary and of the involuntary muscles, that it stimulates and quickens depressed action of the heart and lungs, that it primarily contracts and secondarily relaxes the small arteries, aug-

menting the quantity of blood in the integument, and that it, also, increases the temperature.

In checking secretions, it has been most effective in its action upon the sweat glands. There is no remedy that has been so successfully used in the treatment of night-sweats of phthisis, or in the general sweating accompanying other diseases. The profuse sweating that occurs in cases of consumption should first be treated with atropine before any other remedy is given, and in the vast majority of cases this symptom will be absolutely checked, and generally in the course of three or four nights. The best results are obtained by giving two or three granules, each containing 1-250 of a grain at bedtime. The dose should be given only once each 24 hours, and after having given this dose for several nights and no improvement has been manifested, an additional granule may be given until the sweating stops or until the pupils become dilated. As a rule, however, three or four granules is the largest number that is necessary to be given. The remedy, however, can be gradually pushed if no good results follow its administration, or if no evil results come therefrom, until 1-60 of a grain has been given. This dose should never be exceeded in the general run of phthisis, and it should never be given unless the patient has become gradually accustomed to its use by giving a smaller dose at first and gradually increasing it up to 1-60 of a grain. The very feeble condition of some of these patients should always be considered when tempted to give large doses.

In acute coryza, where the eyes are watery and the nose dripping, accompanied by sneezing and pain at the root of the nose, there is probably no remedy that will act as quickly in overcoming these disagreeable and annoying symptoms. The method of administration is to give to an adult, to start with, two granules of 1-250 of a grain each, and give them every two hours until dryness of the mouth and throat is produced. Usually one dose will produce this effect. The continued action of the remedy may then be kept up by giving one granule every three hours.

Ptyalism, whether produced by poisonous effects of mercury or whether it accompanies other forms of stomatitis, or when it occurs during pregnancy, is rapidly checked by the use of atropine. In these cases it is best to give one granule every two or three hours until the desired effect is produced, or until marked physiologic effect is shown.

Atropine should never be given to nursing women, because of its power to arrest the secretion of milk. Whenever it is desirable to check the mammary secretion, however, particularly in cases of stillbirth, two granules of atropine may be given every three or four hours. Some physicians order cloths, which have been saturated in solutions of atropine or of belladonna, to be applied to the breast. Poisoning is thus more likely to follow than by the internal use of the medicine. Atropine must be absorbed into the circulation before physiologic, medicinal or poisonous effects manifest themselves. It is better

to insure a certain action by a known quantity being introduced directly into the stomach than to depend upon an uncertain and unknown quantity being slowly or indifferently, or sometimes quickly, absorbed through the skin covering the glands.

A better way to check mammary secretion is to apply a figure of eight bandage over the glands, passing it over the shoulders, under the axillæ, then over the breasts again, making firm compression and holding the glands steady. They must not be handled or rubbed with camphor, lard or any other popular remedy. The quieter they are kept, and the less they are stimulated by rubbing, the quicker will the secretion of milk cease. Bandages should be applied immediately after the birth of a stillborn child, because it frequently prevents the appearance of milk, that is, it aborts the secretion. The breasts may become uncomfortably full and even throbbing and slightly painful, and milk may even run out of the nipple, but persistence in this method for two or three days will finally produce desired results. The great difficulty is to keep nurses and well-meaning women who crowd themselves into the sick-room, especially if the patient should be a young mother, from rubbing the breasts or applying a breast-pump. This simply stimulates the glandular activity and induces a flow of milk. Give the glands absolute rest and insist upon it.

There is a form of diarrhea which is characterized by serous discharges. There is sometimes no fecal matter present, while at other

times this serum is discolored by the bowel contents. There is either capillary leakage or the mucous glands are extremely active, pouring out a secretion so thin that it resembles serum. Sometimes the discharges are of greater consistence, because they contain large quantities of mucus. The secretory centers have lost their control over the intestinal track, and consequently, abnormal quantities of fluid are poured into the intestines. What is necessary is to find some remedy that will check secretion, that will inhibit or tone up the paralyzed nerves or relaxed condition of the capillaries. Atropine is such a medicine; possibly the best. The most exaggerated form of this serous discharge is in cholera. It occurs in broken and debilitated patients; also after the withdrawal of opiates in the treatment of the opium habit. Start with 1-100 gr., give it every three or four hours and regulate both dose and time interval by the results that follow.

The second condition to be antagonized is that of spasmodic contraction of muscles. Here we find asthma. Few remedies can more quickly and efficiently check an attack than atropine, given hypodermically in doses ranging from 120th to 60th of a grain. One precaution should be used in giving atropine in diseases of the lungs: It is contraindicated in all cases where the skin is hot and dry and where the mucus is scanty. In diseases of the lungs, where there is no expectoration at all, atropine will aggravate the disease and make it worse. As a rule, atropine will make any condition worse where the

skin is dry, where the mucous membrane of the mouth and tongue is dry and where there is dilation of the pupils. Atropine to be of benefit, should be used in cases that present opposite conditions to those just enumerated.

Whooping-cough is another disease of spasmodic character, which yields very happily to the treatment of atropine and probably more success follows its administration than that of any other medicine in the treatment of the spasmodic stage of this disease. As this disease is generally one of childhood, the dose should always be carefully considered. It is well to remember, however, that children bear atropine proportionately better than do grown people. It is always best to begin with a small dose, 500th of a grain night and morning to a child. The child should be carefully observed, and if the dose is a proper one the face will become flushed about a half-hour or hour after the dose has been given. If there is no flushing of the face and if the paroxysms of coughing are not diminished, the dose should be increased gradually each day until the face does become flushed after its administration. The face assumes a bright scarlet, similar to that noticed in scarlet fever. It does not, however, last very long, and it cannot produce injurious results. It must be remembered and should always be kept vividly in the mind of a physician that *"1-96 of a grain of atropine is sufficient to kill an infant,"* and that this dose should never be approached.

Here, as in asthma, the best results are obtained in those cases where the expectoration is

copious. Whenever atropine is given to children, even in small doses, always instruct the nurse or mother to watch the pupils of the eyes. Explain to her that the effect of the medicine is to make the pupils larger, and when the pupils do become larger, that the dose must not be increased but maintained at that point, or even diminished.

Atropine reduces contractions of voluntary and involuntary muscles and is indicated therefore in rigidity of the os uteri during labor; in tenesmus of the bladder and rectum and in stomachic, intestinal, hepatic and renal colic. In torticollis, or in spasm of single muscles, atropine should be administered hypodermically into the muscle affected.

If the treatment of incontinence of urine, no remedy produces results so satisfactory as those obtained by the use of atropine. It is particularly indicated where the mucous membrane of the bladder is sensitive. In treating nocturnal incontinence, a single large dose of the medicine should be given at bedtime. The kidneys eliminate atropine from the blood, and by its presence in the urine it, also, locally relieves the sensitive mucous membrane which is irritated by the presence of small quantities of urine and produces frequent and uncontrollable expulsions.

Hypodermic injections of atropine, 1-60—1-100 gr., at the seat of pain often cure sciatica and facial neuralgia.

Dysmenorrhea and ovarian pains are, also, controlled by the internal use of the medicine. Migraine is often cut short, especially if the

remedy can be given in anticipation of the attack.

Atropine stimulates and quickens depressed action of the heart and lungs. Here its use is of extreme value in cases of collapse or shock, no matter what the cause of this shock or collapse may be. It is best in these cases to give it hypodermically, in doses ranging from 1-60 to 1-30, or even 1-20 of a grain, and one need not hesitate one moment to inject 1-30 or 1-20 of a grain of atropine when proper symptoms are present. Repeat the dose, if necessary, within one hour. It is better still to even anticipate this condition and give it at the very first sign of collapse or shock, and in this way one will frequently be enabled to prevent this very serious condition from coming on. The symptoms which should induce one to inject atropine in these doses is where there is reduction of temperature, with the pulse constantly growing feeble, as in hemorrhages, where the skin is cold, wet and clammy. Such conditions may be found following chloroform poisoning, following severe operations, excessive hemorrhages, particularly post-partum, sunstroke and cholera.

In the congestive form of all chills, where the blood has accumulated in some internal organ or structure, having been drawn from the surface, leaving the skin a pale or a bluish color, cold and wet, the patient probably in a rigor or chill, even though the temperature be excessive, atropine should be injected hypodermically. In malarial countries, where congestive chills are most frequently met with, atropine should al-

ways be handy for immediate use. In fact, a congestive chill, if it could be anticipated, or if the injection could be given immediately upon the first indication of the approach of a congestion, there is no doubt but that it can be avoided. In these cases, it is well to give a 60th or 40th of a grain. Repeat the dose if no effects are noticed within half an hour.

Atropine is, also, an excellent remedy in all cases of internal hemorrhages. It has met with excellent favor in the treatment of hemorrhages from lungs, stomach or bowels, and particularly in uterine and post-partum hemorrhages. Excessive menstruation is frequently cured or greatly benefited by the internal administration of atropine.

The dilation of the pupil produced when the solution of atropine is dropped into the eye, is of great value in preventing adhesions and hernia of the iris, in relieving intraocular pressure and in reducing inflammation of the iris, also in permitting ophthalmoscopic examinations to be easily made.

Primarily, atropine contracts and secondarily relaxes the arterioles. The augmented pressure which at first occurs relieves congestion and increases arterial and capillary circulation and the quantity of blood in the integument. This action is utilized in the treatment of those diseases which involve the skin, as erysipelas, scarlet fever and neurosis. When depression is present in erysipelas and scarlet fever and the eruption is ill-defined or tardy, atropine changes the character of the eruption and

very materially improves the condition of the patient. This primary action of atropine is, also, utilized in the treatment of congestions and hemorrhages. A single dose of three or four granules should be given as early as possible.

When indications are present which require the use of atropine, and there is doubt regarding the susceptibility of the patient to the action of this remedy, or from whatever cause hesitancy exists in regard to its administration, the following plan should be followed as one from which no possible harm can result: One granule, gr. 1-250, should be given every two hours to adults until there is dryness of the mouth and throat. By this time, beneficial results are frequently manifested in acute cases. If more prolonged action is deemed necessary, one granule should be taken every three or four hours. This method can be employed in the treatment of all cases where atropine is indicated, but sometimes better results are obtained by a single large dose in cases of emergency, as in congestive chills, hemorrhages and shocks where the physician's good judgment must be used.

When atropine or any other medicine is administered in small and frequently-repeated doses, the effect is gradual, and when the results are obtained, the medicine is given at greater intervals, or is withdrawn altogether. It is impossible to know how much of any remedy will be needed to overcome a disease or remove a symptom. Undesirable results are more likely to follow a single large dose than small doses frequently repeated. This latter method is preferable when

prescribing atropine for blondes. They are more susceptible than brunettes to its action. The redness of the skin (which is secondary) frequently follows small doses of this drug and is most marked in those who have light complexions.

"More deaths have followed medicinal doses of atropine than of any other drug."—(*Brit. Med. Jour.*, Jan. 9, '97.) The above statement should necessarily cause physicians to use small doses frequently repeated, as danger from fatal poisoning is then greatly eliminated. But where prompt action is imperative, large doses must be used, always, however, with the utmost caution.

Children bear atropine proportionately better than adults. While atropine can be given to adults in doses of 1-20 of a grain when indicated without serious results, the aim should always be to use as small a dose as will alleviate the symptoms and cure the disease. Atropine in doses of 1-10 of a grain, administered to adults, *in health*, would probably cause death in many instances. There would be produced increase of the pulse-rate and respirations, active, talkative delirium, convulsions, stupor and paralysis. In dosimetric medication, poisoning cannot occur if minimum doses are given according to the rules formulated. In adults, except in cases of collapse, as in chloroform narcosis, opium poisoning or extreme shock, 1-60 of a grain of atropine should be exceeded only after full consideration of all the circumstances connected with the case. In infants 1-200 of a grain should never be exceeded, unless the dose has been gradually in-

creased, and it should be guarded always with one-half the amount of morphine. This dose is for collapse or shock only, or in cholera infantum.

Atropine is directly antagonistic to the action of pilocarpine; each remedy can therefore be used as an antidote to overcome the evil effects of the other.

In opium poisoning the best physiologic antidote is atropine.

As atropine increases peristalsis and prevents the griping produced by the action of cathartics, it is important as an aid to this class of medicines.

SUMMARY.

Atropine checks secretion. It is, therefore, applicable in the cure of night-sweats, early or moist stage of acute coryza, cholera, cholera infantum, and to suppress secretion of milk and of the salivary glands.

Atropine overcomes spasmodic contractions of muscle fibers and is, therefore, used in spasmodic asthma, spasmodic stage of pertussis, rigid os uteri, colic of hollow viscera, tenesmus of bladder and rectum, incontinence of urine and is used to dilate the pupils. It distributes abnormal blood-supply or reëstablishes the disturbed circulation and is, therefore, effective in reducing internal congestions, useful in collapse and shock, and probably its curative value in the treatment of hemorrhages depends upon the fact that atropine distributes the blood, carries it away from the congested and bleeding area.

The relief that follows its administration in migraine, sciatica, trifacial neuralgia, dysmenorrhea, deep hypodermic injections in myalgia, torticollis, depends upon its ability to divert the abnormal blood-supply in the structure affected to other parts of the body.

In stimulating the action of the heart and lungs it is useful in collapse, syncope, opium poisoning and is, also, combined with morphine in hypodermic medication to overcome depressing and unpleasant effects of morphine, as nausea and vertigo.

CHAPTER XI.

BISMUTH SUBGALLATE.

Dose for adults—15—30 grains in 5-grain tablets.
Dose for children—5—10 grains.

Internal medicinal action: Antacid, antifermentive, antiseptic and astringent.

External medicinal action: Astringent, protective, antiseptic and absorbent.

The writer has discarded all forms of bismuth except the subgallate, which is the only one referred to in this article. The chief reason why this salt of bismuth is given the preference is because it is milder and freer from poisonous action. Its results are more satisfactory and more liberty can be taken with the dose, simply because of its comparative harmlessness. The subnitrate is a harsher preparation and in both the external and internal use is more likely to produce poisonous symptoms.

The principal diseases for which bismuth is prescribed are those of the gastrointestinal canal.

Vomiting, when dependent upon irritation within the stomach, as from acid fermentation, inflammation, ulceration or hyperacidity, evidenced by a sense of burning in the epigastrium and sour eructations, is generally relieved by giving ten grains every one or two hours in acute cases, when the vomiting is severe. In chronic forms 15 — 30 grains should be given before meals.

When heavy drinkers vomit large quantities of mucus, it is best to first use the stomach tube and wash out the stomach with hot water from one to three times a day; after which, give 20—30 grains of bismuth with 3—4 granules of strychnine nitrate, grain 1-67 each, and three granules of capsicin.

Pain from ulceration, inflammation of the mucous membrane of the stomach or bowels, or the colicky pains from gastric indigestion, sometimes readily yield to bismuth.

That form of intestinal indigestion manifested by pain two or three hours after meals, and sometimes accompanied by diarrhea, is greatly benefited by 15—30 grains of bismuth taken before meals. If pains are severe 2—4 granules of codeine sulphate, gr. 1-12, may be given in combination with bismuth.

In catarrhal conditions of the large or small intestines, bismuth subgallate is really a wonderful remedy; but it must be persisted in for weeks, preferably taken before meals. Where the bowels are irritable, easily and frequently moved, with slight tenderness on pressure over the abdomen, bismuth should be given a fair trial, for it will cure many such cases.

In *diarrhea,* when caused by improper food, particularly during hot weather, as in cholera infantum, summer diarrhea of infants, of typhoid fever or of tuberculosis, where an antiseptic and astringent is indicated, bismuth will prove to be a valuable remedy. It is especially indicated in typhoid fever and may be continued for weeks. There are many cases of diarrhea in which the

thin, watery stools show a decided fermentive action, that is, the evacuations are full of small bubbles, the odor is extremely offensive.

This condition is produced by improper eating. The food, instead of being digested, ferments and putrefies. Sometimes it is produced by starchy foods, as potatoes, rice and peas; particularly so if not well cooked. At other times fruits or meats may be the cause. It is necessary to seek the cause, which must be removed to properly treat such conditions.

Bismuth subgallate is particularly applicable in the treatment of fermentive diarrhea. It is also applicable in overcoming formation of foul gas even in apparent health. In normal digestion there should be but little gas formed and the stools should not be offensive. Both of the above conditions are abnormal and should be corrected. Regulate the diet, and give bismuth until a proper diet has been found.

Bismuth is but very slightly changed in the gastrointestinal tract. It is not usually dissolved and therefore rarely enters the circulation, but passes out slightly altered but decidedly changed in color. The white subnitrate becomes as black as the yellow subgallate, through action of sulphur compounds. This blackness is utilized in determining the quantity of mucus present. As the mucus is of a grayish color it forms a strong contrast, particularly with the blackened, well-molded stool.

As bismuth is but slightly soluble and then only under very rare and unknown conditions, it is not generally absorbed and is therefore

classed as non-poisonous. Sometimes, however, it contains foreign substances, as arsenic and lead, but not frequently enough to deter one from using it.

Fatal poisoning can be produced by injecting pure bismuth salts directly into the blood, and it sometimes incidentally follows when used to dress large open wounds, burns or ulcerations, by absorption of bismuth into the circulation, producing acute stomatitis, blackening of the mucous membrane of the mouth and intestines, diarrhea and intestinal pains. Absorption is much more easily produced when applied to open wounds than when taken internally. In fact, the latter method is extremely rare.

EXTERNAL USE.

As a powder, bismuth may be dusted in all ulcerations and in open suppurating wounds.

It acts as a germicide and as astringent, it is also protective and absorbent. Care must be taken, however, when dressing very large open surfaces, as bismuth is readily absorbed, producing poisonous symptoms. It is particularly applicable in the treatment of moist conditions, as in some forms of eczema, herpes, intertrigo, burns, chancroids, fissures of the nipples and anus, chapped lips and hands. Bismuth should be dusted into the diseased parts several times daily. If cakes or crusts should form they should be gently removed by applications of warm water or sweet oil, and not roughly picked out. Better let them come away by themselves, unless the affected part becomes too foul.

In acute and in chronic coryza, in ozena, a very efficient snuff is prepared according to the following formula:

Bismuth subgallate .....dr. 1
Amylum .....oz. 1

Two or three grains of morphine may be added if sneezing is severe and the irritation great. This powder can be snuffed or blown into the nose every hour until relief is obtained.

SUMMARY.

As bismuth subgallate is soothing to the mucous membrane of the entire gastrointestinal canal, allaying irritation, relieving pain, lessening peristalsis, checking secretions, arresting fermentation, neutralizing acidity, checking inflammation and ulcerations, it necessarily finds its most important field in the treatment of diarrhea and indigestion, in giving relief to many symptoms accompanying these diseases.

Bismuth is not dissolved but passes through the intestinal canal, locally effecting its curative action.

CHAPTER XII.

BRYONIN.

Standard granule—Gr. 1-67, gm. .001.

Dose—2—6 granules every one to four hours until effect.

Bryonia Alba contains bryonin a glucoside, and bryonidine an alkaloid. It was discovered by Walz in 1859. Bryonin is used medicinally in preference to bryonidine because of its milder action. The latter is a decided irritant to the mucous membrane of the gastrointestinal canal. In sufficiently large doses, bryonin is a powerful hydragogue cathartic. It also stimulates the kidneys and thus increases the quantity of urine. When given in excessively large or poisonous doses it produces violent colic, vomiting, profuse watery stools and even collapse. This shows very decidedly its irritating character.

Nearly all medicines which are irritants in large doses, are gentle stimulants in small ones, stimulating in a mild form some of the effects produced in poisoning. When some irritants in medicinal doses produce watery stools, if the cathartic effect can be suppressed by means of opiates, they are likely to act alone upon the renal secretion. Some medicines may act either as diuretics or as cathartics. Colchicine and calomel belong to this class, and so does bryonin.

The indications for its use are therefore plain. In all cases of dropsy, whether of the serous

cavities or of the cellular tissues, the absorption of the effused fluid is successfully accomplished by the use of bryonin. Four to six granules, each containing gr. 1-67 may be given every three hours until some effect is manifest, such as diarrhea or increase in the urinary secretion. This action may be continued if deemed advisable in dropsical conditions by continuing the dose, or, if effects are not produced, increase the number of granules. A combination of bryonin and apocynin, three granules each every three hours, is an excellent prescription for treating dropsical effusions.

As a result of the inflammation of serous membranes, after fever has been reduced by aconitine, there frequently remain various painful and annoying conditions which may continue for years; *e. g.,* the severe headaches which occur after an attack of meningitis; the "stitch in the side" which follows pleurisy; the precordial pain of chronic pericarditis and the pain and stiffness of joints which remain after an attack of rheumatism are all relieved and frequently cured by the administration of bryonin. The principal use, indeed, of bryonin is in the alleviation and cure of chronic inflammations of serous membranes. After a decided physiologic impression has been made with the drug, beneficial results are more rapidly and effectually produced by its subsequent use. In such cases give 4—6 granules every four hours. Keep short of the cathartic action of the medicine. If catharsis is produced give half the number of granules every four hours and continue them for several

weeks. In ordinary muscular pains, or particularly in pains along the tendons as a result of rheumatism, or strains, or fatigue from undue muscular exertions, all are very frequently relieved by taking one or two granules of bryonin every hour. If improvement is not manifest within two or three days, add two granules of rhus toxicodendron to each dose of bryonin. If this fails give macrotin, two granules, with bryonin granules. Two granules of bryonin and two of colchicine make an excellent combination with which to combat chronic rheumatism. Success follows the treatment of chronic diseases only after perseverance in the use of properly-selected remedies. The rule is not to change medicines often when treating chronic cases. Oppose chronic diseases with chronic treatment.

CHAPTER XIII.

CACTIN.

Standard granule—Gr. 1-134, gm. .0005.

Cactin is a glucoside, the active medicinal principle of cactus grandiflora. Standard granule gr. 1-134. Adult dose four granules every two hours. Cactin is a cardiac stimulant and stomachic. Its stomachic effects may be secondary following the improved heart-action and circulation. However that may be, digestion and appetite are frequently markedly improved while taking this remedy. Its physiologic action on the heart and blood-vessels is similar to that obtained by the use of digitalin. It contracts the arterioles, increases the force of the heart-action, reduces the number of pulsations, increases the blood-pressure and the quantity of urine.

The indications for its use are therefore not difficult to determine. Whenever the heart-action is feeble, rapid, irregular, intermittent or palpitating; when the pulse is easily compressed and the urine is scanty; cactin is indicated. While better results are obtained in the purely functional than in the organic muscular and valvular derangements, there is no disease in which the heart-action is feeble which contraindicates its use. In œdema of the feet and ankles of the aged as a consequence of feeble heart-action, this remedy is of particular value. It will

cure some cases in which digitalin has failed. It has this particular advantage over digitalis preparations in common with apocynin, *i. e.*, it has stomachic properties.

For some time to come, digitalis will be the first remedy of its class to be prescribed in many heart-diseases. When it fails, as is frequently the case, cactin improves the condition of the patient. No other remedy is so useful in palpitation in which no organic lesion can be discovered. The diet in these cases should be carefully investigated. Coffee, tea, and alcoholics must be discarded and three or four cactin granules may be given every three hours.

In combination with strychnine arsenate its influence over the circulatory system is greatly increased. It can be given without fear of cumulative action and is comparatively a harmless remedy.

In prolonged cases of typhoid fever, pneumonia or diphtheria, where the heart-action is feeble, or is likely to become so, cactin may be advantageously combined with other medicines and administered throughout the course of the disease. Patients recover with stronger pulse and convalescence is not so protracted as when the heart is not looked after. This is particularly true with regard to diphtheria in children. They take the granules willingly because of their tastelessness.

CHAPTER XIV.

CAFFEINE (ALKALOID).

Standard granule—Gr. 1-6, gm. .01.

Merck gives a list of over forty simple and compound salts of caffeine. The citrated caffeine and simple caffeine are most frequently used, the dose ranging from one-half to five grains. For hypodermic use, caffeine and sodium benzoate is to be preferred on account of its solubility. Dose from one to five grains. Ten grains are frequently given by those who use large doses and during twenty-four hours thirty grains is about the limit. Of the granulated citrated caffeine sixty grains is the dose generally given.

Physiologic action: Caffeine and coffee are stimulants to the general nervous and muscular systems. When coffee is taken in small amounts a feeling of general well-being and cheerfulness follows. Excessively large and continuous doses produce general debility and paralysis. Like alcohol and opium then, it is stimulant in small doses and paralyzant in large ones. In some of its effects it is similar to digitalin. It strengthens the heart-action and reduces the number of pulsations, increases blood-pressure and the quantity of urine. It acts through the vasomotor centers and contracts the arterioles. The urine is augmented by this increase of blood-pressure,

while at the same time the rodded cells in the uriniferous tubules are stimulated to increased secreting activity.

Coffee has also stomachic effects. In suitable amounts the digestion and the appetite are improved, the sense of oppression after over-eating is relieved, peristalsis is increased, and with many individuals coffee has decidedly laxative properties. On the other hand one of the chief causes of stomachic dyspepsia is undoubtedly the drinking of too much coffee. Opposite effects are produced by taking coffee or caffeine accordingly as the amount is stimulating or paralyzing. Headache of a nervous type coming on as a result of worry, grief, mental overwork and fatigue, such as are produced by excitement attending a court trial or any duty, business or social, are greatly benefited by two-grain doses of caffeine, preferably given in combination with a similar amount of Antifebrin and half the amount of monobromated camphor, every two hours or every hour until relief is obtained. In migraine, Hare prefers caffeine instead of its salts, in one-grain doses every fifteen minutes until four or five doses are taken.

Caffeine produces its best effects in migraine when given early. Three to five-grain doses given when the first symptoms are manifested, are considered almost a specific by some physicians. Very little benefit is to be derived from this remedy after the pain is once established.

The most important use to which caffeine is put is in the treatment of heart-derangement and cardiac dropsies. Cardiac dyspnea from any

cause is benefited by giving caffeine in one-grain doses every half-hour for five doses; then repeat the dose every one or two hours as necessity demands. In so-called "heart-failure," five-grain doses of caffeine and sodium benzoate are very useful and a quickly acting heart-stimulant.

In dropsical effusions, whether in serous cavities or in cellular tissue, particularly those depending upon weak heart-action, and low blood-pressure, caffeine frequently increases the amount of urine within 24 or 36 hours. Two grains should be given every two hours. Scanty urine in acute or chronic nephritis is frequently increased by caffeine when digitalin has failed to produce any results. While the indications for caffeine and digitalin are similar, caffeine should be given the preference when prompt action is required, and when a general stimulant both to the muscular and to the nervous system is demanded. We should not forget that digitalis stimulates only the circulatory system, that its action is very slow, that caffeine acts quickly and stimulates brain, circulation and muscle.

In all diseases in which somnolence or stupor or even coma is present, particularly when depending upon retention of urine, caffeine is of great value. In wakeful conditions, especially in sthenic cases, caffeine is contraindicated. In opium poisoning caffeine is useful to prevent sleep, to induce wakefulness and improve the circulation and the quantity of urine. After ordinary hypodermic injections of morphine when the urine is often scanty and its passage

more or less difficult, a grain of caffeine every half-hour for four or five doses produces a freer and easier flow.

Caffeine does not seem to be a complete substitute for coffee. It does not produce the same exhilaration and feeling of well-being that coffee does, because coffee contains an empyreumatic substance.

In pneumonia of the aged caffeine should be given freely, two or three grains every two hours, on the least sign of feeble heart-action; or better still, it should be given as a preventive, as in the aged, pneumonia frequently means "heart-failure" which, by being anticipated, may be prevented. Caffeine is an excellent substitute for alcoholics in all cases of nervous, mental, muscular or cardiac depression, because it is a general nerve and muscle tonic or stimulant. For those physicians who for any reason are opposed to the use of alcoholics, caffeine will more than fulfil all that alcohol can possibly promise in rapidity of action as well as in conservation of energy.

The hypodermic method is to be preferred in all cases of emergency. True, it is not exhilarating, the imagination is not stimulated, and it will never be so popular a stimulant as alcohol. For this very reason it should replace alcohol as much as possible.

Caffeine is highly recommended as a preventive of asthmatic attacks. Five or even ten-grain doses at bedtime prevent attacks which come so frequently in the night.

In diphtheria, puerperal fever, abortion and

other similar conditions in which the heart-action is so greatly depressed as a result of septicemia, caffeine sodium benzoate in five or even ten-grain doses should be given hypodermically every four hours in severe cases, or one to two grains may be given by the mouth every hour in less severe cases. This salt is about half the strength of caffeine.

The value of kola to prevent and to relieve fatigue, mental or physical, depends chiefly upon the large amounts of caffeine it contains.

Kola has lately come before the profession as a remedy that can be used as a stimulant, as a bracer and as is frequently called a "pick-me-up." Importers of kola nuts have done, indeed, not a little in striving to make physicians believe that preparations of this drug can supply nervous and muscular energy. The American public, physicians as well, labor under the delusion that they can do an enormous amount of work both mentally and physically, that half the time can be spent in dissipation and not wear out the body, and all that is necessary then is simply to take a few doses of kola, and the mind and the body are reinvigorated and all their former strength has returned.

There is no doubt whatever that the present generation is living faster than it should. In many instances this fast living is not an immoral life. Competition in business and a great desire to obtain wealth push these men on, so that with very little sleep, with hardly time enough to eat their meals properly, they rush through life always on the point of over-excitement,

spending probably twenty hours out of the twenty-four in actual business pursuits. No man can stand this kind of fast living without breaking down.

The advertisers of kola preparations know very well that many individuals are in absolute need of something to brace them up. They cannot and will not take rest. If any means then are offered as seductive as the kola advertisements, whereby it is necessary to take only a small amount of the preparation, and all the tired feeling, all the worry and all the anxiety, are supposed to disappear; if by taking kola a man can crowd two or three more hours of work in the 24, he thinks he has learned of a wonderful remedy. The mistake, however, is soon discovered. There is no remedy that can take the place of sleep, proper rest and proper eating. Stimulants may do some good for a while, but the reaction comes and with it premature decay.

There is another class who lead a fast life immorally. Men who believe that they can spend half their time in dissipation of all kinds, and then by taking something as kola, they can be relieved of the fatigue of their dissipation. One cannot lead a life in which the energies are worn away whether that life be a proper one or an improper one and then expect to be built up by a few spoonfuls of medicine a day.

There are times when it may be absolutely necessary that a crisis should be bridged over. There are times in the physician's life when work comes too rapidly upon him and proper rest cannot be obtained. In cases of this kind kola, caf-

feine or coffee itself will no doubt be a great benefit in stimulating wornout muscle, tired brain and rapidly beating heart. When such remedies are used in case of sickness, they will bridge over any momentary weakness and are properly used, but where the life is worn away by too much business, or too much dissipation, preparations of this kind are of no particular value. In fact, they are injurious for the reason that they will deal out for the time being, latent energy and latent strength, which must again be wasted and which only assists in breaking down the body more quickly. One cannot gain strength solely by the use of medicinals. One must not waste that strength and it should be cared for, by proper rest, by discarding anxiety and preventing worry. These are of more value than all preparations of the caffeine type.

CHAPTER XV.

CALCIUM IODIZED.

(Calcidin—A. A. C.)

Tablets—One-third grain each, and powder.

Iodized lime, or so-called brown iodide of lime, is not a chemical combination of lime with iodine, but simply a mixture of the two elements. Lime has a very strong affinity for iodine and forms with it a union, ordinarily stable until it comes in contact with the acid of the gastric juice, when the iodine is set free in a nascent state and is absorbed. When iodine is thus liberated it is non-irritating and quickly enters the blood.

The chief indication for the use of this remedy is in acute inflammatory croup, membranous or otherwise. As there is no positive diagnosis of diphtheritic croup until a culture has been made, calcium iodized should be given in all cases of croup. As soon as it is learned that the disease is diphtheria, antitoxin should be injected. Calomel in fifth-grain doses should be given every half-hour until the stools show a brown or greenish color. Calcium sulphide should then be given every half-hour or every hour, in large doses until some decided improvement is manifest.

In all other cases of croup, not diphtheritic, one tablet of iodized lime should be dissolved in

a tablespoonful of hot water and given every ten or fifteen minutes until there is some improvement, which generally follows the third or fourth dose. After the severer symptoms have subsided, one tablet may be given every half-hour or hour.

If the symptoms are not severe and the patient is only slightly hoarse, it will be necessary to give the tablets only every hour. Then if the symptoms at any time become alarming, it will be necessary to repeat the dose every ten minutes.

In families where croup is of frequent occurrence, mothers soon learn the value of this remedy and will not be without it. It is claimed that where croup is so quickly cured, they were only cases of spasmodic or false croup. Very well; for the sake of argument, let it be so. If it is a source of great satisfaction to cure even so harmless a disease as false croup, with all of its apparently terrible symptoms, with so harmless and pleasant a remedy as iodized lime, others will say that an emetic would have done just as well. This may be admitted for argument, but compare the nausea produced by the emetic and the not particularly esthetic effects of vomiting, with the very rapid effects produced by a remedy that acts agreeably without any unpleasant symptoms. It does count for a very great deal to cure your patients pleasantly. If iodized lime will cure spasmodic croup, it does good service. That it does cure acute attacks of "true croup" there is no doubt. That these same attacks are inflammatory in their nature, and not wholly spasmodic, is veri-

fied by the fact that a slight croupy cough precedes the acute attack or remains several days after it.

Few diseases are as painfully distressing to our little patients or strike greater terror to the heart of the mother than a sudden attack of croup. Few diseases require such prompt and active treatment. It is therefore necessary that some promptly-acting, some reliable and effective remedy should always find a place in the medicine-case of the physician. There is none that the writer can so heartily recommend and endorse as iodized lime, and to be sure you get what is right, use Calcidin, A. A. Co.

Give it freely in hot water; give it frequently; it is harmless, it is reliable and constant in its action.

The only other use to which the writer has put this remedy has been in the treatment of enlarged glands of scrofulous children. One tablet every four hours is the dose. The results have been good as the enlargement disappears after several weeks of treatment.

CHAPTER XVI.

CALCIUM SULPHIDE.

Standard granule—Gr. 1-6, gm. .01.

Tablets containing gr. ½—gr. 1.

Dose—One to three or four granules every half-hour, or every one or two hours.

Tablets—One every two or three hours.

Calcium sulphide, so-called, is a loose chemical combination or mixture in which calcium sulphate is the base and sulphureted hydrogen the active agent, of which a good specimen must contain at least 30 per cent.

It decomposes very readily on exposure to the air, which accounts for the fact that the calcium sulphide of the shops is usually inert. There is enough oxygen in the air of even a tightly-corked but pretty full container to spoil a layer on top, so that the next prescription is filled from what is practically calcium sulphate. Strictly fresh, calcium sulphide should be put into a protected pill or granule like those so carefully and successfully prepared by The Abbott Alkaloidal Co., whereby the full strength of this most valuable agent is retained. When calcium sulphide is taken internally, the patient's breath emits the disagreeable odor of sulphureted hydrogen and eructations of the same gas also occur. It is thus clearly demonstrated that this salt is decomposed within the body, and that sulphate of lime and sulphureted hydrogen are

formed. The sulphate of lime is insoluble and passes out with the feces, and the sulphureted hydrogen is absorbed into the blood and eliminated by means of the skin and lungs.

Because of the elimination of sulphureted hydrogen from the blood by the lungs, calcium sulphide produces excellent results when used in the treatment of diseases of the bronchial tubes. Sulphureted hydrogen is thus brought into contact with the glands of the respiratory mucous membrane and stimulates them.

In all catarrhal diseases of the lungs where the sputum is scanty or tough, in measles and pertussis where the cough is distressing, in chronic diseases of the lungs where the expectoration is in a state of putrescence, the character of the mucus is materially changed, and the distressing cough is relieved, by the administration of calcium sulphide.

Through the researches of Ringer and Murrell it was learned that calcium sulphide possesses the property of preventing and aborting boils, particularly when they occur in successive "crops."

This remedy is frequently used to reduce inflammation and check suppuration of the lymphatic glands, and every indication tends to show that it will prove a valuable remedy in the treatment of carbuncles. In prescribing for patients afflicted with these diseases, two or three granules, each containing 1-6 of a grain, should be given every one, two or three hours, according to the severity of the attack. In chronic diseases give three to six granules before meals.

A most important application of sulphide of calcium is in the treatment of zymotic diseases.

Measles, whooping-cough, scarlet fever, smallpox, diphtheria and erysipelas, are all more easily controlled and are freer from sequelæ when this remedy is used than when other agents are employed. Calcium sulphide should be given throughout the entire course of these diseases.

If complications arise, this remedy should still be continued, either alone or in combination with those remedies which are required to meet the new conditions.

When fever is present aconitine should be given. When there are tendencies toward collapse and signs of heart-failure, caffeine is the remedy indicated; when the danger is paralysis, as in diphtheria, strychnine should be administered. When the throat is inflamed, and is the seat of ulceration, or of diphtheritic deposits, it is best to give calcium sulphide in solution.

In severe cases the remedy should be given every fifteen minutes. By its frequent administration in throat diseases, the solution of calcium sulphide almost constantly bathes the inflamed and infected mucous membrane, and aids in bringing about a speedy cure.

The septic materials produced by the various bacilli of zymotic diseases are probably neutralized by the presence of sulphureted hydrogen in the blood, or the white blood corpuscles are stimulated to unusual vigor and their phagocytic property is greatly increased. Certain it is, that physicians, who have used calcium sulphide in the treatment of infectious diseases, testify to its

wonderful efficacy in preventing or counteracting septic infection.

Calcium sulphide produces good results, possibly, then, by destroying the bacilli, and by neutralizing the poisons which are produced by them. Further, the action of this medicine upon the glandular structures of the respiratory and intestinal tracts produces an increase of the secretions and in this way eliminates morbid materials from the blood.

It is said that anemia is produced by the disintegration of the red blood-corpuscles through long continued action of the sulphides. The disease for which this medicine is given is more likely to be the cause of the anemia than the remedy itself. This action of calcium sulphide need not be considered in the treatment of acute infectious diseases because of their short duration.

In the treatment of whooping-cough the writer has frequently given calcium sulphide continuously for three or four weeks, always with marked reduction in the number and severity of the paroxysms, but he has never seen anemia follow its use. If, however, anemia exists, or if its occurrence seems probable, one or two granules of arsenate of iron should be given with each meal.

It is important to remember that a fresh solution of sulphide of calcium should be prepared daily and kept in a well-corked bottle. Free access of oxygen decomposes the medicine, a disagreeable odor of sulphureted hydrogen is

emitted, and, besides this, the therapeutic quality of the solution is destroyed.

It is best to measure the doses in a medicine glass, for metal spoons are blackened by contact with calcium sulphide, and this frequently conveys the impression that the medicine must be unusually strong to produce such an effect. If a spoon is used it should not be allowed to remain in the solution, and an explanation of the discoloration ought to be given, with the assurance that no harm can result to the patient.

Calcium sulphide is a harmless remedy, and may be given in doses of four or five grains without injury. When too much is given it produces nausea and vomiting.

In treating adults for erysipelas or for chronic lung diseases, where the object is to overcome the offensiveness of the sputum or to reduce the tenacity of the mucus, two or three granules, gr. 1-6 each may be given every one, two or three hours.

In the treatment of whooping-cough, a dose should be given every two or three hours. For infants one year old, eight or ten granules should be dissolved in a three-ounce vial and a teaspoonful of the solution administered every two or three hours. To children from two to five years of age, a single granule may be given at a dose. To patients from five to ten years of age, one or two granules given every two hours is a proper dose.

It will be found that those who will swallow the granules do not tire of the medicine so quickly as when it is given in solution.

In all cases where the eructations of sulphureted hydrogen gas are excessive, or are complained of, the dose should be diminished and given, preferably, before meals when there is no acid present in the stomach, for the acid of the gastric juice quickly decomposes calcium sulphide. While this decomposition eventually occurs, it is best to have it occur slowly so as to favor absorption of the sulphureted hydrogen, and not have it ejected from the stomach by eructation and lost.

Subsequent and continued use of this medicine in the treatment of acute infectious diseases, particularly, diphtheria, smallpox and measles, shows it to be very reliable, shortening the duration of this class, preventing serious complications and reducing the mortality. It is a remedy from which one can expect good results.

It should be pushed until the blood is thoroughly saturated, evinced by the breath being heavily charged with sulphureted hydrogen.

Remember, that when too large doses are given or when too frequently repeated, nausea and vomiting are produced. Watch this symptom, also instruct the nurse regarding it. Regulate its administration so as to prevent it. Give granules, or tablets if large doses are required. For quick action give the solution frequently enough to prevent vomiting.

CHAPTER XVII.

COLCHICINE. (ALK.)

Standard granule—Gr. 1-134, gm. .0005.
Dose—One to four every two hours till effect.

Colchicine is the alkaloid of Colchicum Autumnale, or meadow saffron, and is prepared in granules containing gr. 1-134, gm. .0005. The medical virtue of the tincture, extract and wine of colchicum, is due to the effect of the active principle, colchicine.

The physiologic action of colchicine depends upon the size of the dose. Small doses, frequently repeated, stimulate the secretions of the liver, intestines, kidneys and sometimes of the skin. The stools become more frequent and bile is always present. Urea and uric acid are found in increased quantities in the urine, while the actual amount of water depends entirely upon the effect colchicine has had upon the bowels, whether there has been profuse diarrhea or not. So with many medicines; if they act chiefly upon one of the secretions, all other secretions are likely to be scanty. This action is particularly marked in those medicines which may act either upon the intestines or upon the kidneys. In order to obtain action upon the kidneys, opiates are combined with such remedies as restrain or prohibit intestinal action but permit renal action.

If very large doses of colchicine are given, it is decidedly an irritant and may produce the

most violent retching, colic, bloody stools and tenesmus and complete exhaustion. Colchicine, a gentle stimulant in small doses, becomes drastic and extremely irritating in large ones.

The disease in which this remedy has always proved valuable is acute gout. Here it is a specific. The more acute the attack, the more severe the pain, the quicker the relief. Begin treatment by giving two or three granules every two hours; also two teaspoonfuls of Salithia in a glassful of water every four hours. If fever is high and the patient robust, give two amorphous aconitine granules with each dose of colchicine until the fever declines. Succeeding attacks will require larger doses of colchicine.

In acute rheumatism, with high fever, in the robust, one granule of amorphous aconitine and one of colchicine may be given together every half-hour or every hour until some effect is manifested, either by relieving prominent symptoms or by producing physiologic effects of the remedies employed, such as diarrhea or nausea. The dose may then be gradually reduced or withdrawn and such remedies given as are indicated.

Chronic rheumatism is frequently benefited by colchicine in combination with bryonin or iodide of potassium. Bryonin is of particular value when the joints are stiff. Iodide of potassium is always a valuable adjuvant in treating chronic rheumatism. While colchicine may produce catharsis in large doses, it is best to produce this effect by means of calomel followed by saline laxative.

Colchicine has not proven itself a reliable

cathartic. Its action is uncertain and the doses usually required for this effect must be so large that it may produce extreme exhaustion before there is any indication, either by vomiting or purging, that the dose has been excessive. Rheumatism, both acute and chronic, is one of those diseases which demonstrates the quicker action of medicines after thorough excavation of the bowels. Whatever the materies morbi may be, after Saline Laxative or Salithia has effectually unloaded the bowels and stimulated hepatic, intestinal and renal secretion, rheumatic remedies act more promptly. It is advisable to continue the use of Salithia three or four times a day, in teaspoonful doses, always on an empty stomach, not only because of its laxative effect, but because of the sodium benzoate and colchicine contained therein. Salithia is a great neutralizer of acid conditions of the urine, and it may be used with marked success in this class of cases.

In chronic gout, in rheumatic gout and in those affections which occur because of a gouty or rheumatic diathesis, as gouty and rheumatic headache, gouty and rheumatic neuralgia, and in other complaints of a similar nature, colchicine is an excellent remedy. In the treatment of these conditions, the best results follow after catharsis has been produced. This should be followed by two granules of colchicine and two of benzoate of lithium given every three or four hours, and continued for several weeks until all symptoms of the disease have disappeared.

Two very obstinate cases of sciatica, one of several months, the other of two weeks' duration,

yielded to colchicine after many remedies had failed. Two granules were given every two hours until free purgation occurred. Then one granule was given every three hours. Improvement was manifest on the second and third days and the recoveries were complete. In neuralgia of rheumatic origin an equal number of granules of arsenate of quinine, gr. 1-6, should be given in conjunction with colchicine.

In uric acid diathesis three granules three times a day, in conjunction with two teaspoonfuls of Salithia in a glassful of water, is a very successful method of treatment. It is not necessary to produce purgation but keep short of it, as the action of colchicine on the liver and kidneys is particularly desirable, and if free catharsis is produced, it fails to stimulate renal secretion. Because it increases the flow of bile it is indicated and successfully applied in chronic hepatitis, congestion of the liver and in jaundice.

As it increases intestinal secretion as well as the bile, satisfactory results follow its prolonged administration in chronic constipation. Two granules three times a day is the dose. In chronic constipation the intestines must be gently and gradually persuaded to move. Quick violent action simply makes constipation more stubbornly resistful.

Because it sometimes greatly stimulates the action of the kidneys it is satisfactorily used in the attempt to get rid of dropsical effusions. Here again the action must be purely renal, and consequently purgative doses must not be employed. Three granules every three hours with

three granules of apocynin proves a useful combination. It is best to precede this, however, by free purgation, by means of calomel followed by a large dose of Saline Laxative. Contraindications: Where there is gastrointestinal irritation, vomiting or diarrhea, and in asthenic patients in general.

CHAPTER XVIII.

CONIINE OR CICUTINE HYDROBROMATE.

Standard Granules—Gr. 1-67, gm. .001.

Dose, two to four increased to six if necessary.

Dose recommended by Merck—1-30—1-12 grain. (0.002—0.005 gr.). Children 1-640—1-40 grain. (0.0001—0.0015 gm.). Injection—1-20—1-15 grain. (0.003—0.004 gm.) Max. Daily—1-6 gr. (0.011 gm.)

Cicutine or coniine is an alkaloid obtained from conium maculatum or spotted hemlock. Antidotes: Emetics, stomach pump, caffeine, strychnine nitrate hypodermically.

Physiologic action (Bartholow): "The action of coniine is primarily and chiefly on the end-organs of the motor nerves. When an active dose of coniine is administered, weakness of the legs and a sense of weight and fatigue of these members is first experienced. The eyelids become heavy and droop somewhat and double or confused vision, a feeling of torpor of the mind and giddiness follow." Harley says: "The whole muscular system is completely relaxed. The orbicularis is incapable of resistance. The movements of the eyeball are very sluggish, and there is more or less complete ptosis. The muscles of mastication and deglutition are nearly paralyzed. Speech is slow and effected with exertion; the voice is gruff, from relaxation of the laryngeal muscles. Withal, the heart and breathing are

normal, sensation and intelligence are perfect, and the mind is calm."

By noting the fact that large doses produce complete muscular relaxation and mental calmness, we should be led to use it chiefly in opposite conditions, viz., great muscular and mental excitation and activity. This application is found to be true, as the following case will illustrate: A young man of twenty-four years who had been drinking too much beer, fell down on the icy pavement, striking the right parietal region.

There was no external evidence of an injury. A restless, active delirium set in, the patient talked constantly and incoherently, he could not sleep and insisted upon walking about indoors and out of doors, all day and all night. There was loss of hearing in the right ear with constant roaring sound, but no discharge; pupils, temperature and pulse were normal. The above condition had existed three days before the writer saw the patient. The reason given for this delay was, it was thought that the beer had produced the delirium, which might have been the case. The patient was wild. He needed to be subdued. The expression used by the writer at the time of prescribing was: "We will have to 'paralyze him'." Four granules of cicutine hydrobromate were therefore given every two hours. After the third dose had been taken, mind and muscles both became less active. The patient was now willing to go to bed. The desire to walk and to talk incessantly gradually passed away and sleep soon brought oblivion which the patient had not known for three nights. The

recovery was uninterrupted and complete. After several months the hearing was also completely restored.

Cases similar to the above often present themselves for treatment, in which it is difficult if not impossible to always determine the cause of mental derangement accompanied by restlessness and great muscular activity. No single remedy has proved itself as efficacious and as harmless as cicutine hydrobromate in the treatment of the above class of patients. Its action is as sure and as constant as that of any medicine, besides producing fairly rapid effects. If the emergency for treatment should be great, the hypodermic method may be employed by injecting 1-20—1-15 grain of the hydrobromate.

One indication for the use of cicutine is "nervousness," restlessness and "fidgetness," particularly so when these symptoms accompany insomnia. Under these circumstances a full and sufficient dose of cicutine produces a sense of lassitude, ease and of mental calmness followed by a quiet sleep, that is refreshing and from which the patient awakens without any feeling of discomfort. There are those who jerk, start and scream at any sudden noise. Their reflexes are overloaded with nerve force and seem to be set to extremely sensitive hair triggers, which are displaced by the slightest impression upon any of the sensory tracts. These unfortunate patients remind one of a frog poisoned with strychnine, which a noise or a breath of air throws into a convulsion. Cicutine is needed in these cases to

lessen the excitability or extreme sensibility of the reflex motor centers.

In those of highly sensitive erotic dispositions, who either through hereditary or acquired sexual excitability, or more likely heredity and cultivation, who are passion plagued, cicutine is a remedy which will aid in helping them to control sexual passion. The masturbator who finds himself sexually incompetent to perform marital duties because of too hasty ejaculation, may delay the orgasm by taking four granules of cicutine every four hours. This should be persisted in for several weeks, to be followed by small doses of strychnine.

Nocturnal and diurnal emissions are controlled by this remedy. For the former 3 to 6 granules should be given, particularly at bedtime, and also during the day in both diseases. A metallic sound as large as can be readily passed, should be introduced into the urethra and retained for ten minutes, three or four times a week.

In the treatment of sexual derangement as in the treatment of other conditions, excitability and irritability of over-sensitive reflexes surely calls for the administration of cicutine. It quiets; it soothes; it subdues. In dysmenorrhea, cicutine has proved a valuable remedy. In severe pains two granules should be given dissolved in hot water every half-hour until pain is relieved or until heaviness of the arms and legs is produced.

In the treatment of delirium tremens during the period of excitement, cicutine will prove valuable. Cicutine is a valuable antidote to

strychnine. There are some patients who cannot take even small doses of strychnine without being made nervous, restless and fidgety. To overcome this unpleasant effect cicutine may be combined with strychnine.

It is claimed that physiologically cicutine acts "primarily and chiefly on the end-organs of the motor nerves." This might satisfactorily explain why all conditions accompanied by exalted muscular activity or spasmodic action can be controlled by cicutine. This does not, however, satisfactorily explain why this remedy is of so great value in painful affections such as neuralgia, cancer and dysmenorrhea. Pain is no doubt frequently produced by a contraction of the smaller arteries. This contraction of the blood-vessel is directly the result of local irritation which produces arterial congestion and pain. Or there may be venous stasis and pain.

When pain is severe, paleness of the skin results, showing disturbed and unequal circulation. There is more blood at the seat of pain than is normally required. When cicutine is administered, pain is probably relieved by a general relaxation of the muscular coats of the smaller cutaneous arteries, which permits a larger amount of blood to pass into the general capillary system, particularly in the skin, which is manifested by a feeling of warmth. This depletes the congested uterus and ovaries and consequently relieves pain. Cicutine frequently relieves the pain of cancer after opiates fail completely; with this great advantage, that it does not produce bad after-effects as do the opiates.

In one case of an apparently incurable pruritus vulvæ, particularly aggravating at night, four granules of cicutine every four hours enables the patient to be at least comfortable. In all cases of exalted muscular movements, in spasmodic action of voluntary and of involuntary muscles, as tetanus, hydrophobia, asthma, chorea, epilepsy, whooping-cough and colics, cicutine has been successfully used and is highly recommended by many writers.

CHAPTER XIX.

CONVALLAMARIN (GLU.).

A SUBSTITUTE FOR DIGITALIN.

Standard granule—Gr. 1-6, gm. .01.

Dose—One every two or three hours as needed.

Convallaria Majalis, or Lily of the Valley, contains two glucosides, convallarin, a cathartic, and convallamarin, a heart tonic.

In order to produce decided results in the treatment of diseases of the heart, it is necessary to give convallamarin in doses of not less than 1-6 of a grain every two or three hours, and the amount may be gradually increased to one grain. When the muscular action of the heart is weak or when palpitation is prominent with an irregular, feeble and rapid pulse, whether these symptoms are produced by an organic disease or only by functional derangement, convallamarin is a proper remedy.

Convallaria was first used to reduce dropsical effusions; sometimes the flower alone was employed, at other times the entire plant.

In 1858 Walz discovered two glucosides above mentioned.

Convallamarin produces its diuretic effect by increasing the force of the heart's action, by lowering the pulse rate, increasing the blood-pressure, all of which tend to increase the blood-pressure in the malphygian bodies in the kidneys.

Its use in organic heart disease produces best results in mitral stenosis, where the blood, by being dammed back into the right side of the heart and in the lungs, producing irregular rythm and action, dyspnea and cough.

It is also tonic in its effects, as are strophanthin, cactin and sparteine; like them it has no cumulative action and deserves a trial in all irregularities of the heart's action and, whenever the heart and the circulation need toning and strengthening.

Digitalis is our first heart tonic, but fortunately, there are others to be used as substitutes if digitalis should fail, or, when digitalis has been given too long, it is well to withdraw it for a week and give one of the substitutes.

CHAPTER XX.

COPPER ARSENITE.

Standard granules—Copper arsenite, gr. 1-1000, gm. .0000625; gr. 1-250, gm. .00025. Tablets, gr. 1-100, gm. .006.

Copper arsenite is chiefly used in the treatment of diseases of the gastrointestinal tract, which have resulted from partaking of unwholesome or of indigestible food. There are large numbers of such cases occurring, especially in summer, among infants as well as adults. Copper arsenite may therefore be prescribed in cases of vomiting, diarrhea and colic, in cholera morbus or in cholera infantum, and in those cases in which pain follows the ingestion of food.

Whenever food instead of being digested undergoes fermentation, it produces colicky pains, vomiting and diarrhea.* In the medicinal treatment of these cases, the object is first to remove the irritating food by means of Saline Laxative and calomel, to prevent fermentation and putrefaction, and to neutralize those products of decomposition already formed; and according to Aulde, to reëstablish the functional activity of the cells. One of the best remedies with which to accomplish this is copper arsenite. It usually

*See article on sulphocarbolate of zinc for the dietetic treatment of these cases.

checks vomiting, pain and diarrhea, within a few hours.

The effects of this salt of copper are not strictly antiseptic as are the sulphocarbolates. Copper arsenite has great advantages over sulphocarbolates in the minuteness and in the tastelessness of the dose. The dose for an adult is one or two granules, each containing gr. 1-250, gm. .00025. The remedy is best given in solution. Twenty-four granules may be dissolved in twenty-four teaspoonfuls of water, and one teaspoonful should be given every fifteen minutes, every half-hour or every hour, according to the severity of the attack.

For infants under one year, four to eight granules, gr. 1-250 each, should be dissolved in twenty-four teaspoonfuls of water, and one teaspoonful should be given every fifteen minutes, every half-hour or every hour. As improvement manifests itself the same dose may then be given every hour, every two hours or every three hours. For children from one to five years of age eight to twelve granules, gr. 1-250, should be dissolved in twenty-four teaspoonfuls of water and administered according to the direction given above.

Dr. Aulde, who lately reintroduced this valuable remedy, recommends smaller doses than those given by the writer. The object is not to give the copper in such doses as will produce irritation, but simply stimulation; and as no harm to the patient has ever occurred in his experience, the writer judges that his doses are not too large.

It should be remembered that the great object

of treatment by means of this remedy is to prevent further decomposition of the gastrointestinal contents and to stimulate the secretions of the gastrointestinal glands. When this is accomplished the medicine is gradually withdrawn. We are made aware that the remedy is accomplishing its object when the vomiting, pain and diarrhea, are gradually subsiding. When symptoms are severe remedies are given frequently in small doses, and are continued until some improvement is manifested. The medicine is then gradually withdrawn. This method of administration reduces to a minimum any risk of overdosing or of poisoning the patient.

When pain follows immediately after the ingestion of food, which indicates stomach indigestion, or several hours after, which indicates intestinal indigestion, arsenite of copper in doses of two granules taken before meals frequently brings relief. The dose for children suffering from stomach or intestinal colic is the same as that recommended in the treatment of diarrhea. Dr. Aulde speaks highly of the administration of gr. 1-100 of copper arsenite in the treatment of seasickness. The dose should be taken before meals.

Various combinations may be made with copper arsenite. If fever is prominent it may be given with aconitine; if pain is severe with codeine or hyoscyamine; or if the stools are green, with emetine; and it should not be forgotten that this is a remedy of exceeding value, being at the same time economic and pleasant.

Copper arsenite was the first medicine used

by the writer which so quickly and permanently converted him to the methods of Alkalometry. The patient was an infant with cholera infantum. Diarrhea was profuse, and frequent, constant vomiting was the chief annoying symptom. The child was extremely emaciated and was almost in a condition of collapse. It was with extreme hesitation that old tried methods were laid aside and copper arsenite in 1-500 grain doses given every fifteen minutes.

It must be confessed that the writer felt extremely uneasy in leaving this patient in such a dangerous condition and prescribing only 1-500 of a grain of copper arsenite. It seemed as if this small dose could not possibly bring relief in so serious a condition. After passing two very uneasy hours, the patient was again visited, thinking possibly that the child was dead, and if so it died simply because active, substantial treatment had not been given. After treating many cases in Cincinnati at that period, when cholera infantum was extremely common, by well-established methods, by giving tangible doses, it seemed almost like murder to turn around and give only 1-500 of a grain of copper arsenite.

Considerable relief was experienced when the patient was found alive, utter amazement was expressed when it was learned that by giving so small a dose actual improvement had occurred. Vomiting and stools were less frequent, and some general improvement was manifested which continued and the child made a complete recovery.

Probably all physicians feel just this way

when changing from old ways with single large doses to the newer way; to this only way; to what appears to be extremely minute, almost infinitesimal and inadequate doses. Yet it is a fact easily verified that apparently minute doses frequently repeated effect cures. Everything in Dosimetric Medicine tends to prove this. Strong prejudices in favor of large doses, and old favorable methods, deeply rooted, must all give way to the certain and prompt response following small doses frequently repeated.

Regarding the dose of copper arsenite it is not really so small as at first appears, as arsenic itself is given in comparatively small doses. Arsenic is probably the active agent in this salt, copper not having much or any medicinal value in such small quantities.

Arsenous acid in such small doses would likely produce similar effects. It is strongly recommended in cholera, colic and diarrhea, particularly following ingestion of food.

Arsenic and copper arsenite produce their effects chiefly by stimulating secretions, restoring abnormal glandular action to the normal. Their antiseptic or astringent properties cannot possibly be considered in such small doses. In cholera infantum noxious fermentative substances enter the blood, depressing the nervous system.

In cholera the gastrointestinal mucous membrane pours out in large quantities the serous fluid so characteristic of this disease. The small doses of copper arsenite restore the nervous equilibrium. Vasomotor constriction is produced and secretory action is prohibited.

Both copper sulphate and arsenic (Fowler's solution) in small doses are frequently recommended in reflex vomiting of pregnancy. It is natural to suppose that a combination of arsenic and copper would also prove useful in some forms of vomiting. Both remedies produce vomiting when taken in large doses. Ipecac has a similar action. Yet these same remedies will check some forms of vomiting when given in minute doses.

CHAPTER XXI.

DIGITALIN.

Standard granule—Gr. 1-67, gm. .001.

Active Principles. The so-called active medicinal principles consist of a number of glucosides: Digitalin, digitalein, digitonin, digitin and digitoxin. Unfortunately, great confusion exists regarding these preparations, which has been fostered by pharmacopœial errors. Thus the digitalin of Homolle and Quevenne, recognized by French authority, is an amorphous, yellowish-white powder, inodorous, intensely bitter to taste, extremely irritating to the nostrils, and highly poisonous; it is sometimes found as small scales. It is chemically a mixture of the digitalin of the German pharmacopœia and the digitoxin of Schmiedeberg. Another form that has the sanction also of the French Codex is digitaline (mark the final e) *cristallisee,* or the digitalein of Nativelle, and appears as white, crystalline tufts or needles, and consists almost wholly of Schmiedeberg's digitoxin. It is very bitter to taste, slowly eliminated and consequently cumulative in action, and should be dispensed only when "crystallized digitalin" is ordered. Both the foregoing are insoluble in water or ether, but the crystallized form yields readily to chloroform and rectified spirit.

The digitalin of the German Pharmacopœia is also the digitalin verum of Kiliani. It is a

white or yellowish amorphous product, consisting of digitalein and digitoxin (Schmiedeberg's); is soluble in water, 1 to 1000 in alcohol; almost insoluble in chloroform and ether.

Digitalein (Schmiedeberg) is also an amorphous, yellowish-white powder of intense bitter taste; soluble in alcohol and water, slightly so in chloroform and ether; as before remarked, this is the chief constituent of German digitalin.

Digitoxin. The digitoxin glucoside of Schmiedeberg is the most poisonous of all the digitalis principles and likewise markedly cumulative in action, owing to the difficulty with which it is eliminated. It occurs as a white, crystallized powder, soluble in chloroform and alcohol, slightly soluble in ether, insoluble in water.

Digitonin. Soluble in water and alcohol, appears in the form of yellow granules, but possesses none of the properties for which digitalis is celebrated. It appears to be identical, or at least closely related, to saponin, the active principle of quillaia bark.

Digitin is a coarsely-granulated, crystalline powder, soluble in alcohol, ether and alkaline solutions, and is both physiologically and therapeutically inert. (Stockwell, Sajous' Annual):

DOSE.

Digitalein (Schmiedeberg's) 1-64 to 1-32 grain.

Digitaline (Nativelle) 1-250—1-60 grain.

Digitalin (Homolle's and Quevenne's French Codex) 1-60—1-15 grain.

Digitalin (Schmiedeberg's or digitalin verum-Kiliani) 1-64—1-32 grain.

Digitoxin (Schmiedeberg's) 1-250 — 1-125 grain.—(Stockwell, Sajous' Annual).

PHYSIOLOGIC ACTION.

When digitalis is given to a frog in which the mesentery is exposed under the microscope, the arterial capillaries are seen to contract. This would indicate that in this instance digitalis is acting upon the vaso-centers as a vasoconstrictor. Sufficient clinical experience has demonstrated beyond a doubt, that digitalis stimulating the pneumogastric, inhibits or slows the heart-action. Following along this line of thought, the question which would most naturally arise is, what conditions exist which require inhibition of the heart-action and vasomotor constriction. In other words, what diseased conditions exist in which the blood-vessels are so abnormally dilated as to produce pathologic changes, combined with acceleration of the heart-action?

Clinical experience again demonstrates that the most brilliant and satisfactory results are produced in passive, non-febrile diseases. The lungs very frequently show the effects of the relaxed and toneless state of the heart and blood-vessels which in the following array of symptoms forcibly demands the administration of digitalis: Dyspnea, irritative cough and expectoration of frothy mucus, sometimes bloody, and cyanosis also exists. The right heart is dilated. It contains too much blood which may be so dammed back as to congest the liver and kidneys, very

materially interfering with the functions of these organs. There is then usually present general vaso-dilatation, particularly in loose tissues, as the areolar connective tissue and in the skin. As a result, the watery fluid passes out through the walls of the capillaries more rapidly than it can be absorbed and dropsical effusion results. The heart, on account of this vaso-dilatation, becomes irregular in its action. There is no constriction of the arterioles, no resistance is offered to the blood-stream. The heart has nothing against which to push the blood.

The heart's healthful activity and its continued strength depend chiefly upon one thing: the resistance offered to the blood-stream by the contraction of the muscular coats in the arterial capillaries. The more physiologically normal this arterial capillary resistance or contraction, the more normal and more vigorous the heart-action, the more normal and healthful the man. Pushing the blood against constricted arterioles keeps up the strength of the heart. Cold weather is a vasoconstrictor, hence, as a rule, better and stronger heart-action prevails. Warm weather is a vasodilator, hence, a feeble action of the heart. Its snap and tone are below par and "that tired feeling" becomes manifest.

In such pathologic conditions as above described, in embarrassed circulation and its accompanying symptoms, as dropsy, dyspnea, imperfect aeration of the blood, scanty secretion of urine, rapid, feeble and irregular heart-action, there is evidently not sufficient irritation of the pneumogastric center and of the vaso-constrictor

centers to produce healthful systolic action and proper contraction of the arterioles. Whatever the primary cause of the disease, the vasoconstrictor nerves have lost their control over the blood-vessel. The pneumogastric nerves have lost their inhibitory power over the heart, consequently the arterioles are widely dilated and the heart is no longer under the slowing power of the *par vagi.*

While the heart may have been primarily affected, the pneumogastrics have eventually lost their inhibitory power, probably because of disease, the heart-muscles themselves have lost their irritability and cannot be stimulated to contraction. Whatever affects the muscles in one part of the circulatory system, is likely to affect the muscles in all parts. Therefore the muscles of the arterioles are also deprived or cut off just as the heart is, from the toning or contracting influence of the nervous centers, particularly the vasoconstrictors. The muscular coats of the arterioles also become weak, degenerated and lose their tone, just as in a dilated heart. When as above, the vasoconstrictors have lost their power over the arterioles, when the pneumogastric can no longer retard the heart-action, some remedy is needed to stimulate both vasocontractors and pneumogastrics.

So far, the medicine that has generally given the greatest satisfaction is digitalis. The chief if not the only indication then for the administration of digitalis, is the loss of balance between the vasoconstrictors and the vasodilators, in favor of the latter, and the loss of the inhibitory

power of the pneumogastrics. The particular cardiac lesion is of no consequence. In fact, there is no heart-lesion or valve-lesion, no diseased condition of the heart which *of itself* calls for the use of digitalis. Only certain accompanying symptoms indicate its use.

Digitalis should not be given simply because valvular lesions are present. There must be diminished blood-pressure and dilated arterioles, feeble cardiac action, retarded flow of blood which produces venous congestion, scanty secretion of urine, œdema and dyspnea. The heart-action must be enfeebled and rapid. If it is irregular or intermittent it is no contraindication, only that it beat frequently or feebly.

Digitalis is a much abused remedy. It is a powerful vasoconstrictor and an inhibitor of the heart-action, and because it is given in cases which neither require an inhibitory action of the heart nor a contraction of the arterioles, it necessarily does harm, perhaps produces death, and the remedy is credited with being uncertain in its action.

A good strong pulse, with normal amount of urine excreted, contraindicates its use, and if it were given where such conditions exist the pulse would beat slower and harder and the quantity of urine would be diminished. Digitalis should be confined to the treatment of enfeebled conditions of the heart and blood-veins with disturbed circulation of the blood. Digitalis is a diuretic only when the arterial capillaries are so dilated as to lessen the blood-pressure in the Malphigian bodies so that the water cannot be forced through

them. It is hardly probable that digitalis can have diuretic effects without first increasing blood-pressure.

Digitalis has been successfully used in the treatment of delirium tremens. This disease is particularly tolerant of large doses of digitalis from dram ij to dram iv of the tincture having been given. The reason why this remedy is of value here, is because of the relaxed condition of the capillary arterioles. Alcohol paralyzes the muscular coats of the arteries. It increases the power of the vasodilators through paralysis of the vasoconstrictors. The so-called "wet-brain" of drunkards, or œdema of this organ, clearly shows that sluggish circulation and venous congestion produce the œdema. As digitalis is a vasoconstrictor its utility in these cases is clearly understood. Digitalis may sometimes cause sudden death in such cases and is not therefore a safe remedy to give in large doses frequently repeated to such patients. Caution should always be used. Strychnine is preferable and is freer from danger, and one need not fear that one's patient may die suddenly and rather unexpectedly as is often the case when digitalis is given.

In the treatment of ordinary acute fevers digitalis should have no place. It is not indicated. There is neither arteriole dilatation, venous stasis, œdema, or any heart-symptom that calls for its use. A rapid heart in fever does not need digitalis. Aconitine in the beginning of sthenic fever will lower the pulse rate much more safely and more rapidly. Strychnine, caffeine and cactin are better and safer remedies to

be used as heart-tonics in the later stages of the disease. In scarlet fever, if the urine becomes scanty, the blood-pressure reduced and the pulse feeble, digitalis may be given until these conditions are overcome. Then it should be stopped. If there are signs of œdema of the lungs, as shown by frothy or bloody sputum with feeble rapidly-beating pulse, digitalis should be given.

CUMULATIVE ACTION.

There is no doubt that sudden deaths occur more frequently while digitalis is being administered than from any other medicine. As some one has said, because this remedy is used to treat diseases of the heart where sudden deaths are frequent, nothing much is thought of these sudden deaths, and the remedy, least of all, suspected. Yet, the fact remains that digitalis is the direct cause.

It may be difficult to satisfactorily explain how death occurs. Repeated doses of medicines are not absorbed into the blood, accumulating without producing any effect. Then after several days, all of this accumulated medicine does suddenly let loose all of its energy, as by explosion, causing death; just as if all the medicine which had been given for days in divided doses should have been given at one dose and quickly absorbed. The probabilities are, that it is a matter of cumulative doses.

All medicines as soon as they enter the body also begin to leave it. It is very well known that many medicines may be detected in the urine within five minutes after their administration.

Also when single doses of some medicines are given, their presence can be demonstrated in the urine for several days thereafter. While there may be some decomposition of some of the alkaloids or other active principles, yet, whether taken in their pure isolated state as digitalin, or if the digitalis leaves are taken, the result is the same, the kidneys eliminate the alkaloids or glucosides. The digestive system, by its chemistry and solvent powers separates the active medicinal principles and other matters from the insoluble.

The most powerful of the active principles of digitalis is digitoxin. It is more slowly eliminated from the blood than are the others. The prolonged action of digitalis depends altogether upon the slowness with which its active principles are eliminated by the kidneys. When poisoning does occur from frequently-repeated doses, the kidneys have not had sufficient time to remove the medicine from the blood. There is therefore an accumulation in the blood, which may increase to such an extent as to finally cause death. It is simply over-dosing, caused by giving the medicine too frequently without allowing time for its elimination. There are many physicians who only give two doses of digitalis daily. This is probably the correct method to prevent accumulation of the active principles in the blood when large doses are given. The frequent repetition of small doses of digitalin, as is customary with those who practise dosimetry, does not seem to be accompanied by the same danger as when cruder preparations are given. Possibly digi-

talin is not as potent as digitalis. The latter may contain more of the poison, digitoxin.

One point should not be lost sight of during a course of digitalis treatment:

If a patient is sick enough to be treated with digitalis, particularly if the patient is aged or the pulse very feeble, he is sick enough to be in bed and kept there in a persistent recumbent position until digitalis has accomplished its work. Why? Because such patients are particularly benefited by the recumbent position. It of itself will lower the rapidity of the heart-action by fifteen or more beats.

The action of digitalis should be more carefully watched than that of opiates because it will kill quicker. In such cases, everything seems to be going along nicely, when the patient rises from his bed and falls over dead. Died of heart disease? No. Died of digitalis poisoning. This is likely to be so in treating typhoid fever or pneumonia with digitalis.

There may be two ways of explaining such results. Digitalis has probably reduced the pulsations below the normal. The heart contracts with extraordinary vigor. On suddenly assuming the erect position more force is needed and the heart must beat with more vigor and, being in a state of tonic activity, its systolic action is so great that it remains in the condition of tonic contraction or systole, and the patient dies.

On the other hand, when too much digitalis has been taken, it loses its stimulating action and becomes a paralyzant; when extra effort is made

as by standing, the arterioles dilate from weight of blood, the heart-action becomes very rapid and embarrassed and, because of the gravitation of blood to the extremities, the brain centers become anemic and fatal syncope results.

It took Koppe four days to recover from the effects of a single dose of 1-33 gr. digitalin.

Give digitalis to feeble patients while in bed until the heart beats normally and the secretion of urine is increased. This will require five or six days.

Then stop giving the drug, but still keep the patient in bed for several days and keep him on 1-30 gr. doses of strychnine every four hours. It is never safe to give digitalis when the number of heart-beats is normal, and surely not when it is below normal. In those cases where in the recumbent or sitting position the number of pulsations is normal, but in which on standing or upon slight exertion it increases thirty or more beats, digitalis must be very cautiously used. Strychnine, apocynin and cactin are better remedies and are free from danger.

In the treatment of post-partum hemorrhage, digitalis has frequently been used with success. As it acts chiefly through the vasomotor constrictions in reducing the caliber of the arterial capillaries by causing contraction of the involuntary muscular fibers, its beneficial effects can be readily explained. In hemorrhages of all kinds, where feeble heart-action and diminished blood-pressure are prominent, digitalis is indicated. Dose dram ij of the infusion or two to four granules of digitalin every two hours for three

doses, after which the remedy must be stopped.

Digitalis is also highly recommended in the treatment of spermatorrhea. Similar conditions which guide its use in other diseases also answer here, viz., relaxation of the vascular system, evidenced by enlarged veins, easily induced sexual excitement with its accompanying congestion. The greater the extent of self-abuse, the more frequent the indulgence in sexual intercourse, particularly to excess, the more readily is venous congestion of the genital apparatus produced. In such cases the most insignificant and trivial thought or act produces an erection. This does not represent sexual vigor, but sexual weakness. The genital vasomotor centers are congested and become extremely sensitive to the slightest irritation. Excessive irritation causes loss of their muscular toning property which gives way to relaxation. This relaxed condition of the genital organs calls for the use of digitalis. The general circulatory system, in fact the entire body, is relaxed and toneless. Improve the circulation by digitalis and small doses of strychnine. Overcome the extreme sensitiveness and the exaggerated irritability of the vasomotor and genital centers by cicutine. If "nervousness" is marked it is best to begin treatment with cicutine until emissions are controlled, then follow it with strychnine and digitalis. Remember always that when the pulse is restored to the normal number of beats, digitalis should be withdrawn and strychnine given in its stead.

Digitalis is a remedy of greatest therapeutic value. It is the most important medicine used

in the treatment of heart-diseases, particularly when accompanied by dropsy. No other remedy can approach it in regard to usefulness. All other heart remedies are compared with it, and the highest attribute that can be applied to any aspirant for honor in the treatment of cardiac diseases is to say it has a "digitalis-like action." It frequently, however, brings disappointment. This is chiefly because it is not given in relaxed conditions of the heart and blood-vessels. It no doubt varies considerably in its composition, depending upon the soil, atmospheric condition, seasons and general environment, and upon the freshness of the plant employed.

There are few drugs toward which individual members of the human family are so generally and differently idiosyncratic. Again, the actions of watery and alcoholic preparations are by no means identical, owing to the differences in the solubility of the various glucosides in these menstrua; an infusion, for instance, holds in solution chiefly the digitonin, while the tincture contains digitalin and digitalein, neither contains much digitoxin, but the tincture necessarily carries more than the infusion. Notably the infusion is more directly and promptly diuretic, and the B. P. tincture more so than that of the U. S. P., but the latter two afford the best results when the heart alone is to be acted upon. But it is doubtful if the tincture alone ever acts as a true diuretic, except in the presence of a heart-lesion, such as is found in connection with some form of hydrops. The drug often fails completely in securing the desired action clin-

ically, because the wrong preparation is employed.—(Sajous' Annual).

Digitalis occupies an almost isolated and rather unfortunate position, because the isolated principles do not constantly represent the medicinal activity of the whole plant. It is a very important medicine, and unlike most important remedial plants it refuses to yield up a reliable active principle. Four active medicinal principles have been isolated, not one of which fully represents the medicinal virtues of the leaf itself.

Ergot which has a similar action, *i. e.,* vasoconstrictor, has nothing better to fully represent its medicinal properties than concentrated extracts. Aconitine, atropine, quinine, morphine, hyoscyamine, strychnine and colchicine, represent the medicinal properties of the vegetable substances from which they are derived. They are reliable and can be given with the belief and the assurance that certain known results will follow their internal administration. This cannot be as strongly and as truly said of any of the products of digitalis. Digitalin has at times disappointed the writer more than any other active principle, inasmuch as it has failed to produce such positive, marked and constant results as the infusion. This is to be regretted exceedingly because of the important position that digitalis occupies.

The time will unquestionably come when the active medicinal principles of digitalis shall be uniformly produced, which does not seem to be so at the present time. Possibly, some one may hit upon the happy and correct combination of

some of the four active principles as they exist in the plant. It is too late in the history of dosimetry to go into the advantages of the use of active principles over that of crude drugs. But until each one is satisfied in his own mind that the isolated substance placed in his hands can do as much and more than the plant itself, he is justified in refusing to use it. As long as the physician feels sure that the crude drug is superior to the active principles found in the market, that it produces better results, he should use the crude drug. He should use whatever produces the best results in his hands, irrespective of what others may believe.

The writer confines the use of digitalis almost exclusively to those conditions in which there is weakening of the muscular structure of the entire circulatory system, blood-vessels as well as heart, manifested by relaxation of blood-vessels, venous stasis, œdema, and scanty urine. Digitalis or digitalin has no place in the treatment of febrile diseases except in combination with aconitine and strychnine, simply, because the heart beats rapidly. Cactin, strychnine and caffeine are better remedies to simply sustain the heart-action when it is needed in such cases. Apocynin has found great favor in the treatment of heart-diseases, in which digitalis is usually prescribed. It is greatly to be preferred to digitalin. In its action in reducing œdema and the number of heart-beats, as well as regulating irregularities, it is equal to digitalis, if not even more reliable. Besides it is a stomachic and is free from so-called cumulative effects.

Notwithstanding what has been said, if the symptoms are not urgent, digitalin is given a trial for five days. If no results manifest themselves within that time, apocynin or infusion of digitalis is given. If no benefit accrues, caffeine and strychnine are added to the above remedies. If œdema is marked and the urine is still scanty, only a few ounces in twenty-four hours, calomel gr. 3 three times a day for three days is given, guarded with codeine if necessary. If these fail, strophanthus or diuretin is given. If there is no improvement by this time the case is probably hopeless. Still, various combinations should be tried. The bowels should be freely moved and sometimes when all efforts seem to fail relief will sometimes come.

Medicines that utterly fail in the beginning of treatment sometimes produce beneficial results when tried at another period. Various combinations can be made. Keep on trying, and do not give up a remedy until it has been pushed to produce its physiologic effect. If you stop short of this, the remedy has not received full justice and cannot therefore be condemned.

CHAPTER XXII.

EMETINE.

Active principle of the root of Cephaelis ipecacuanha.

Doses—For emetic 1-8—1-4 gr. of emetine (0.008—0.016 gm.)

Emetic dose of powdered ipecac 4—20 grains.

Emetine. Expectorant, 1-60—1-30 gr. (0.001—0.002 gm.)

Standard Granules—Gr. 1-6, gm. .01.
" " Gr. 1-67, gm. .001.

When emetine is given in health, in doses sufficiently great to produce decided physiologic effects, the flow of saliva is increased, as is also the mucus in both the respiratory and the alimentary canal. In the pharynx this is particularly marked, as one is compelled to cough out the mucus as it accumulates. Vomiting is produced, with more or less nausea, and there necessarily follows muscular relaxation, exhaustion and free perspiration. When larger doses are given the flow of bile is increased and catharsis is produced.

The indications for the administration of this medicine are then very clear. Whenever it is desirable to increase the mucous secretions or to modify them, as in catarrhal diseases of the respiratory or gastrointestinal tract, emetine is indicated. It is among this class that emetine is most successfully used. In one of the most common diseases of childhood, bronchitis, it plays an important part. When the cough is dry and

harassing, one or two granules 1-67 gr. each can be given to a child every half-hour or every hour until the cough is easier, or until it becomes looser. If the cough is painful add a codeine granule gr. 1-67. The granules can then be given at greater intervals.

It is a remedy particularly useful to loosen or to liquefy tough sputum. One thing in favor of this granule is that little patients can easily be made to believe that they are taking candy. It is not necessary to mention medicine, not an unimportant factor in treating children successfully. To an infant who cannot chew a granule, twelve to twenty-four granules, 1-67 gr. each, may be dissolved in twenty-four teaspoonfuls of water and one teaspoonful given every half-hour or hour. If vomiting is produced give half a teaspoonful. If there is fever, make a solution, 12—24 granules of emetine and aconitine, one granule of the latter for each year of the patient's age, in twenty-four teaspoonfuls of water and administer according to the degree of fever. In spasmodic croup or in capillary bronchitis, give five or six granules every half-hour until improvement is manifest or until vomiting is produced.

In chronic gastric catarrh of drunkards, or in others where large quantities of mucus form and interfere with the digestion, irrigate the stomach, if possible, then give one granule of emetine gr. 1-6, and two to four granules of capsicin before meals. In summer complaint of children when the stools are green, give Saline Laxative until free purgation is produced, then follow this with two granules of emetine, gr. 1-67 every two

hours. In mucous diarrhea in children without tenesmus two granules 1-67 gr. every two hours frequently effect a cure. If there is tenesmus add one or two granules of codeine gr. 1-67. The codeine is to be stopped when the pain or tenesmus subsides.

In treating dysentery of adults, four to six granules of emetine gr. 1-6 should be given dry without water. The patient should be kept as quiet as possible. A hypodermic injection of morphine gr. 1-6, atropine gr. 1-150, may be given fifteen minutes before the granules are taken. The object being to prevent vomiting, every means must be employed to this end. If it is prevented, emetine in large doses acts as a cathartic and produces dark-green stools, after which there is general relief from dysenteric symptoms. To cure dysentery quickly, it is necessary to produce free evacuation from the bowels. In spite of frequent movements certain cathartics are not only indicated, but are almost specific in their action, and emetine is one of them. If emetine appears too slow, a heaping tablespoonful of epsom salts in plenty of water is another excellent remedy. Repeat the dose of either medicine in six hours, if no action has been produced. If pain or tenesmus is severe in the adult, give three granules of codeine sulph. gr. 1-6 every hour, or a hypodermic injection of morphine and atropine. It must be remembered, however, that free purgation brings quicker and more permanent relief than do anodynes, although the latter may be necessary.

While emetine in large doses produces vomit-

ing, it seems strange that this same medicine should also relieve vomiting. In the vomiting of children it is particularly useful, when it results from stomach catarrh. Small doses are necessary. Dissolve twelve granules, 1-67 gr. each in twenty-four teaspoonfuls of water, and to make it still more efficacious, two or three tablets of copper arsenite gr. 1-100 are added. Of this mixture, a teaspoonful may be given every half or every hour. In vomiting of pregnancy, also for vomiting occurring in cancer of the stomach, emetine sometimes gives surprising results.

Hemorrhages. Ipecac has long deserved a place in the rank of antihemorrhagics. In postpartum hemorrhages and in hemoptysis particularly when it recurs almost daily, emetine given in large doses, two granules 1-6 gr. each, every half-hour until nausea or vomiting is produced, usually checks the bleeding. No matter how delicate or how weak the patient may be from recurrent bleedings, this remedy is worthy a trial and evil results are not to be feared. The depression following vomiting is not harmful, neither does the muscular effort made at vomiting increase the hemorrhage.

An excellent combination for all internal hemorrhages is:

Emetine gr. 1-6, one or two granules,
Ergotin two to four grains,

taken every one or two hours according to the emergency of the case.

For further and more complete description of the treatment of hemorrhages, see ergotin.

CHAPTER XXIII.

ERGOTIN.

Standard granules—Gr. 1-6, gm. .01. Tablets, gr. 2, gm. 0.12.

No medicine is so successfully and so universally used in the treatment of internal hemorrhages as ergotin.

It is very prompt in its action, requiring about fifteen minutes to begin its effect, which lasts about one hour, when the dose should be repeated. Prompter action can be produced by means of hypodermic injections. For this purpose prepare the solution at the bedside. Distilled water is best; next best is boiled water. Two to five grains of ergotin (or tablets may be used in emergency) should be dissolved in sufficient water and filtered. This entire amount should be injected every half-hour in severe hemorrhage until some effects are manifest. Better results follow the hypodermic method than giving it by the mouth. Where there can be no objections, the solution should be injected directly into the part affected. This is particularly true in the treatment of uterine fibroids, in which after weeks of treatment the tumor diminishes in size and is sometimes absorbed. Even if it does not decrease in size the bleeding is controlled. In all bleeding from the uterus whether produced by cancer or any other cause ergotin is our most useful medicine.

When ergotin is administered to a frog and the capillary circulation in the web of its foot is studied under the microscope, or when the human eye is ophthalmoscopically examined under similar conditions, it is noticed that the smaller arteries contract. This shows that ergotin acts upon the involuntary muscular fibers, and as these fibers are under the control of the vasomotor centers, ergotin must act primarily upon this part of the nervous system. The effects produced by contraction of the arterioles cause rise of blood-pressure which shows itself by increasing the quantity of urine. The heart and respiratory action are rendered slower and peristalsis is increased.

INDICATION FOR ITS USE.

The indications for its use are plain: It should be administered in those conditions requiring contraction of involuntary muscle fibers.

As the smaller arteries are chiefly composed of involuntary muscle fibers, whenever it is desirable to diminish capillary blood-supply, ergotin is indicated—as in hemorrhage or congestive headache. As the uterus is almost entirely formed of involuntary muscle fibers, this is a structure which can very easily be made to act by means of ergotin. The most prominent example is in post-partum hemorrhage. When the uterus fails to contract ergotin produces prompt and strong contraction. Its action upon the sphincter of the bladder, which is also formed of involuntary fibers, is marked and in the treatment of incontinence of urine it is very useful.

One of the unpleasant actions of large doses of ergotin is that it produces contraction of the sphincter vesicæ and this causes retention of urine. It is by observing effects, thus produced remote from those desired or intended, that much therapeutic knowledge is obtained.

When ergotin is given for some other purpose and it also coincidently produces retention of urine, it is clearly shown that ergotin should be useful in incontinence of urine; and such is the case. When combined with strychnine its efficacy is increased.

GENERAL RULES FOR TREATING INTERNAL HEMORRHAGES.

In the treatment of internal hemorrhages there are certain rules which are generally applicable to all forms.

Never give alcoholics—or hot drinks. Every means should be used to divert or draw the blood from the bleeding area by position; muscular relaxation; mental quietude; local application of ice. The skin and the intestines may be used as structures into which to divert the blood.

Position in Hemorrhage. Place the patient in that position which most thoroughly relaxes all muscles, and which tends at the same time to relieve, by gravity, the afflux of blood from the bleeding part. In cerebral hemorrhage semi-reclining or even sitting upright is advantageous. In all other severe internal hemorrhages where from the great loss of blood there is danger of syncope, the head must be lowered and the rest of the body placed at an incline in order to keep

the respiratory and cardiac centers filled with blood. As long as these centers are normally supplied with blood the cardiac and respiratory movement will continue.

With the exception of cerebral hemorrhage it is well to begin treatment by giving a hypodermic injection of morphine gr. 1-4, atropine gr. 1-60 to 1-100. This quiets mental activity, relaxes the muscles, and diverts the blood to the surface by drawing it from the interior of the body.

This should be followed by a hypodermic injection of two to five grains of ergotin together with gr. 1-6 of emetine. Repeat every half-hour or every hour until improvement is manifest or until nausea is produced. Ice may be applied immediately over the bleeding organ.

Placing the feet and legs in hot water up to the knees is of particular value in cerebral hemorrhage and in nose bleedings.

TREATMENT OF SPECIAL HEMORRHAGES.

UTERINE HEMORRHAGE.

In all cases of menorrhagia or any unnatural uterine bleeding a careful examination must be insisted upon. Internal medication may be tried for a while if the bleeding is slight, but if improvement does not soon follow great injustice is being done to the patient, and her health and life may be jeopardized by failing to discover the cause. This is particularly true if an abortion is in progress or has occurred. The dangers of excessive bleeding may be great, but greater still are the dangers of septicemia.

Suspicion must always be aroused in healthy

women if excessive menstrual flow accompanied by clots of blood occurs in one who always had a normal flow. Greater suspicion should be aroused if any preceding period was delayed, even for so short a time as two weeks. The longer the delay the more likely has pregnancy been the cause, if the woman is otherwise healthy.

It is very unusual for healthy women to suddenly cease menstruation from any cause, except pregnancy, without there being some palpable evidence of the cause. Pregnancy itself cannot be discovered by objective symptoms alone during the early months. If the patient has an object in concealment, it is impossible always even to plausibly make a conjecture as to the real cause of the suppression. "Taking cold" is a statement pregnant with suspicion.

Excessive menstruation with clots does not as a rule follow suppression in the unmarried as a result of exposure to cold. There is no reason why suppression from cold should be followed by periods of menorrhagia. With the married it is all different. There is generally no object in concealment. Pregnancy occurs more frequently than we know, which is followed by abortion within four to six weeks, without the woman being aware of her condition, or even of the fact that she miscarried.

So then, in all cases of suppression of only two or more weeks, followed by excessive flow with clots, particularly in heretofore healthy women, married or single, suspect pregnancy. It is not necessary to express your suspicions. If

the discharge is offensive in young women, married or unmarried, this makes the suspicion of pregnancy stronger.

Ergotin is not the treatment. Curetting should be employed, if examination fails to show some cause which might call for other treatment. Ergotin cannot be depended upon to detach adherent placental structures, nor can it heal or in anyway change the granulating or raw surface, usually left after abortions, from which blood oözes sometimes for many months.

The curette is the only means. This should not be delayed. The more excessive the bleeding, the greater the odor, the more urgent the need. Many a life has been lost, particularly among the unmarried and many also among the married, because the true condition was not known and the bleeding alone was treated by giving internal remedies. Examine these cases carefully and apply proper treatment.

In cases of severe post-partum hemorrhage, inject hypodermically five grains of ergotin dissolved in three to five drams of water, every half-hour until some beneficial effect of the drug is produced. To improve the action of ergotin add strychnine 1-20 grain, giving but one dose. Emetine in doses sufficient to produce nausea is also a very useful medicine. At the same time elevate the foot of the bed; keep the head low; introduce the hand into the uterus, even carrying in a piece of ice, kneading and compressing the uterus through the abdominal walls with one hand, and gently exciting it also from within.

Another method is to introduce into the uterine

cavity, with dressing forceps, a sponge saturated with hot vinegar or inject by means of a fountain syringe one or two quarts of hot vinegar.

CEREBRAL HEMORRHAGE.

The danger here is not from excessive loss of blood but from pressure and damage done in rupturing brain tissue. Generally the damage is done at once. Medicines are therefore hardly applicable during the active bleeding, yet one feels compelled to do something. Surgery will likely be more frequently used in the future.

It is possible to do good by anticipating cerebral bleeding when an individual complains of vertigo, formication, pains in the head, particularly in one predisposed to it, by giving an active cathartic as croton oil, by fasting, hot baths, cold to the head and hypodermic injections of ergotin. The same treatment is also applicable even after the hemorrhage has occurred. Put the patient in a sitting posture. If sthenic fever occurs give Dosimetric Trinity, one or two granules every half-hour until reduction of fever.

PULMONARY HEMORRHAGE.

Treatment: Hypodermic injections of morphine, atropine, ergotin and emetine. Let the patient rest in a comfortable reclining position. Quiet his mind. If it is the first bleeding tell him that the bleeding will relieve the congested lung and that there is no danger; that even if other hemorrhages come on no harm will result from the loss of blood. Let the room be well ventilated, even cold. Give cold drinks, never allow hot ones or alcoholics. The patient must

talk as little as possible and cough must be checked by means of codeine and emetine. Ice may be applied over the bleeding lung, but removed if the patient becomes chilly. If the hemorrhages are of daily occurrence give ergotin gr. 2—4, and emetine gr. 1-6, every hour until nausea is produced. This generally stops this kind of bleeding completely. If bleeding ceases before nausea is produced stop at that point. If this should fail, give atropine hypodermically gr. 1-100 every hour until full physiologic effects are produced, also digitalin gr. 1-30 every three hours for several days.

If there is rise of temperature give Dosimetric Trinity, one or two granules every half-hour or every hour until the fever diminishes.

A few words of advice regarding the future handling of these latter class patients may not come amiss.

There is absolutely nothing to be compared with proper climatic influences. At the present time treatments of all kinds pale into insignificance when compared to the wonderful results produced by an outdoors life in Colorado, if commenced early in the progress of the disease. The first slight dullness upon percussion, the first rude rale, the first departure from the normal rythmic, musical vesicular murmur, accompanied by slight elevation of temperature, the first hemorrhage, each or all absolutely call for change of climate from lower altitudes to the health-giving Rockies, where the air certainly possesses extraordinary germicidal or other lung-

healing properties. Keep patients in the last stages at home. Do not send them to Colorado.

GASTRIC HEMORRHAGE.

This usually results from ulceration or cancer. General treatment, hypodermic injections of morphine, atropine and ergotin; tannin gr. x every hour for three doses; allow the patient to swallow small pieces of ice and apply ice over the epigastrium. Absolute rest is necessary.

No food of any kind must be given by the mouth. It is not necessary to give anything but water for at least two days. If food seems absolutely necessary inject, per rectum, Liquid Peptonoids, Somatose and Bovinine. If thirst is excessive and if drinking water irritates the stomach, inject a pint of water per rectum every two or three hours.

In passive forms of stomachic hemorrhage which sometimes occur every day in debilitated cases, give fifteen to thirty drops of turpentine every two or three hours in the form of an emulsion.

Severe and continual bleeding from gastric ulcer needs surgical measures.

INTESTINAL HEMORRHAGE.

Intestinal hemorrhages need more careful diagnosis to determine the seat of bleeding than any other form. If hemorrhoids can be excluded locate the point of bleeding. If possible treat on general principles of rest, ice applications, hypodermic injections of morphine, atropine, ergotin and emetine.

If hemorrhage continues, surgical means *must be* employed. If active hemorrhages are from known injuries, medicines are not of much use. Keep the patient quiet with morphine and atropine, and apply surgical means.

HEMATURIA.

Bleeding from the urinary tract requires careful examination to determine the seat of disease. If from the kidneys, ergotin and gallic acid. In passive states turpentine. Prolonged hematuria with evidences of tumor requires surgical exploration.

If bleeding is from the bladder, prostate gland or urethra, the above systemic treatment may be given, particularly ergotin and gallic acid. Local applications of ice externally as near the seat of bleeding as possible, injections of ice water, also of such astringents as tannin, sulphate of zinc, nitrate of silver or acetate of lead.

CHAPTER XXIV.

EUONYMIN. (RES.)

Regular dose—Gr. 1-2—5.

Standard granules—Gr. 1-67 and gr. 1-6 (gm. .001—01.)

Author's dose—4—6 of the 1-6 grain granules.

Euonymin is produced from wahoo, and is a mild cathartic, slow in action and free from griping. It increases the biliary and intestinal secretions. In congestion of the liver, which is particularly manifested by pain, heaviness or fullness in the right hypochondrium with slight or marked jaundice, euonymin has found particular favor with the writer. If nothing but pain exists over the region of the liver, with no other symptoms except possibly constipation, four to six granules of euonymin before meals frequently brings about relief. One severe case of intestinal colic lasting for many months with excessive emaciation was cured within a week by means of euonymin. The only indication for the drug was pain over the liver, indicating a congested condition of that organ.

CHAPTER XXV.

GELSEMININE (ALK.)

Standard granule—Gr. 1-250, gm. .00025.

Dose—One to two granules every half-hour, or every one or two hours according to the effect desired.

GELSEMIN (CON.)

Standard granule—Gr. 1-134, gm. .0005.

Dose—One to two granules every half-hour or every one or two hours.

Gelseminine, also erroneously written gelseminin and gelsemine, is the active principle of gelsemium sempervirens, or yellow jasmine. The yield of the alkaloid, according to Wormley, is 0.2 per cent.

Gelsemin is a concentration, which contains the above alkaloid. Its effects are similar to those produced by the administration of gelseminine.

Whether gelseminine the alkaloid, or gelsemin the concentration is used, it is advisable to adhere to the use of the one, after becoming thoroughly familiar with its action, and not change to the other. Either granule is reliable and will usually produce the effect desired in cases in which this remedy is indicated.

Throughout the south and west gelseminine is chiefly employed because of its efficacy as a febrifuge. In many other parts of our country this remedy is administered particularly in all

kinds of neuralgia. If one or two granules of gelseminine are taken every half-hour, by a person in good health, there is soon perceived a feeling of languor and an indisposition to move. The arms and legs feel heavy, the upper eyelids droop, in spite of all efforts to raise them, and the pupils dilate. When given in large doses it "induces paralysis of both sensation and motion, sometimes of one first, and sometimes of the other; lowers the force and rate of the pulse and respiration; reduces temperature; dilates the pupils; projects the eyeballs but does not suspend the heart's action until the respirations have ceased."—*National Dispensatory.*

In the treatment of many cases in which gelseminine is indicated, it is necessary to produce some slight physiological effect of the medicine before improvement is manifested, particularly dilation of the pupils and languor.

If small doses of gelseminine are given until improvement is manifested or until the first physiological effects of the medicine are experienced and it is then given at greater intervals, poisoning cannot occur.

Gelsemium is regarded as a dangerous remedy, especially when used to reduce fever. This reputation is well-earned because of the large doses of the cruder preparations that are often given. If these preparations are used, they should be given in small doses, frequently repeated. As a result of fatalities from the use of tinctures and fluid extracts of poisonous medicines the false deduction is made that if crude preparations are dangerous, the active prin-

ciples of these medicines must be more dangerous.*

Many of the active principles of plants are looked upon by some physicians as a class of medicines which should be left upon the shelves of the chemist as specimens to exhibit the result of his indefatigable research.

With the various crude preparations of gelsemium, as with all other crude forms of medicine, the danger lies in not knowing just how much active principle is contained in a given dose. There may be little or there may be much, according to the conditions under which the plant grew, the circumstances attending its getting and the manipulations through which it has passed. Who but the chemist will undertake to answer how much? There is but one way to reduce this danger to a minimum, and that is to use known qualities of active principles by prescribing the unchangeable, and accurately measured alkaloidal granules.

It may possibly be a hindrance to the use of the active principles according to Burggraeve's method, because the physician is compelled to know, at least, the primary physiological effects of the medicines which he uses. When it is necessary to push a remedy, he should also impart this knowledge to his patient. When a patient is given gelseminine he should be told that just as soon as a languid feeling overcomes him and his eyelids grow heavy and droop, the medicine should be taken at greater intervals. When gel-

* We desire to emphasize the author's statement of this most manifest error which has stood stupidly in the way of therapeutic advancement so many years.—PUB.

seminine is given in full doses, physiological effects are usually manifested within half an hour and continue for at least two hours. When marked effects are felt, it should not be given oftener than every two hours.

When a patient is fully under the influence of gelseminine he experiences muscular weakness and loss of sensibility to pain. The remedy is indicated, therefore, in all spasmodic contractions of the voluntary and of the involuntary muscles and in painful nervous diseases, neuralgia, neuritis, etc. J. N. Freeman considers gelsemium a most valuable remedy. He has given it with success in intermittent fevers of children with involvement of the nervous system; in fevers of dentition, dysentery, infantile rheumatism, convulsions, tetanus of the new-born and meningitis. In chorea he considers it the best of all remedies. In convulsive or spasmodic coughs, as in whooping-cough and in asthma, gelsemium is highly recommended by Bartholow.

When good results are thus obtained from the use of crude preparations, better results will follow the use of the active principles and there need be no hesitancy in using them. For the above cases, one, two or three granules of gelseminine may be given to adults every half-hour until some improvement is manifested, or until a feeling of langour is perceived. The dose should then be given every two hours. In treating children observe the aconitine rule — dissolve in twenty-four teaspoonfuls of water one granule for each year of the patient's age together with one additional granule. A teaspoonful of this

solution should be given every hour in acute cases and every two hours in chronic cases.

Besides the effect which gelseminine has in controlling exalted muscular action, it is also of value, as before stated, in relieving exalted sensations, or pain. In neuralgia of the facial nerve, of the sciatic, in ovarian neuralgia and in dysmenorrhea, gelseminine is a remedy of great value. The pains accompanying uterine cancer are often relieved by the use of this alkaloid. Pruritus vulvæ, especially when of nervous origin and pruritus accompanying eczema and urticaria, are benefited and cured by means of gelseminine. In treating these diseases, two or three granules given every hour will usually be sufficient. If no improvement follows they may be given every half-hour until the eyelids become heavy, after which the two-hour interval should be observed.

Gelseminine has been used extensively in the treatment of remittent fever, pleurisy, pneumonia and meningitis. It should be used only in sthenic cases, however, because of its depressing power. If strychnine is administered in conjunction with gelseminine, much of its depressant action is lost. Gelseminine is also used to relieve the nagging pain in the beginning of labor, and to check after-pains.

In "dosimetry" we have in aconitine a febrifuge which is vastly superior to gelseminine and free from all danger. Still, if it is desirable to give gelseminine in febrile cases, it may be given every half-hour until improvement is noted, and then every hour or every two hours.

If the action of the lungs and heart is depressed, or, in order to prevent this depression, strychnine and caffeine are the remedies indicated. If the febrifuge qualities of gelseminine are further developed and appear advantageous, a compound granule might well be prepared in which gelseminine, digitalin and strychnine could be combined. All depressing action would then be avoided.

Gelseminine should be more frequently used in dysmenorrhea. It will certainly replace the opiates. Two granules every half-hour until the pupils dilate or a languid feeling is produced.

It is also an excellent remedy for wakefulness produced by mental or physical excitement.

CHAPTER XXVI.

GLONOIN.

Standard granule—Gr. 1-250, gm. .00025.

Dose—One granule dissolved on the tongue every five to fifteen minutes until effect and then every half, to one or two hours as needed, to maintain the same.

Glonoin, trinitrin and angio-neurosine are all synonyms for nitro-glycerin. In dosimetric medicine it is prepared in granules which contain 1-250 of a grain, gm. .00025. It can also be obtained in a one per cent solution.

The physiological effects of Glonoin can be very easily, quickly and safely demonstrated by chewing one or two granules gr. 1-250. If nothing is observed within five minutes, another granule may be taken. As a rule, one granule is sufficient. Sometimes, as with all medicines, larger doses than usual are required. Within a few minutes there is a decided fulness in the head, or pressure. With some the head feels larger, the temples throb, the face flushes and the heart palpitates. These symptoms last but a short time from small doses and they are not particularly unpleasant. If very large doses are taken in health, the above mentioned symptoms are increased, then the general surface feels warm.

Glonoin is a stimulant in small doses and a depressant in large ones, for there is produced

paleness of the skin, nausea, vomiting, muscular weakness, inability to walk, exhaustion and syncope.

When miners go into the dynamite smoke after blasting, they often become unconscious for hours, sometimes delirious, and so prostrated as to be unable to stand up for days, while it takes weeks to fully recover their strength. Vomiting occurs constantly for days. Violent sick headache with pains mostly in the temples. In spite of the alarming conditions, miners generally recover. Death is extremely rare.

Never in medicinal doses is it possible to produce such results, as it would likely require five, ten or more grains, and rarely is 1-50 of a grain exceeded, and this large dose is given only in collapse, where there are conditions existing which can combat the effects of even larger doses.

As glonoin produces flushing of the skin and brain, it is naturally applicable in opposite conditions, viz., when anemia of the brain exists as in collapse, syncope and angina pectoris.

In order to produce flushing of the skin and brain, it must act upon the vaso-motor nerves and dilate the arterioles. Its application can then be easily made, when it is deemed advisable to relieve internal congestions by drawing blood to the surface and for the relief of all internal pains.

Nitro-glycerin is an extremely useful and potent remedy and it is not so dangerous to use as might be inferred from its name. Except in cases of emergency, when one or two granules

may be crushed, and dissolved on the tongue every five minutes until effect, it is safest to begin with doses of one granule, or with one-half drop of the one per cent solution. The dose may be gradually increased and repeated every fifteen to thirty minutes until some marked physiological effect is produced. When the proper dose for the individual is ascertained, it should be repeated, to keep up the impression, every half to one hour.

The effects of glonoin are not lasting when given in medicinal doses, and usually pass away within an hour. Good results do not follow the use of this remedy, unless flushing of the face, fullness of the head, or increase of the heart's action is produced. In cases of emergency, where death seems impending, four granules dissolved in hot water, or in hot whisky, or two drops of a one per cent solution should be injected hypodermically, and this may be repeated every fifteen to thirty minutes until some improvement is observed.

The most alarming symptoms produced by taking glonoin are quickly recovered from, without bad or lasting effect. It is doubtful if death has ever been produced by the internal administration of medicinal doses of this remedy.

During a paroxysm of renal, hepatic, uterine, stomachic or intestinal colic, the face is pale and the skin is cold and moist. The arterioles of the integument are contracted and those in the organ or structure involved may also be contracted.

If this is the case, capillary anemia results and it is well-known that sudden anemia pro-

duces pain and spasmodic contractions of muscular tissue. On the other hand, the arterioles in the organ and structures involved may be dilated, and congestion of the part ensue, while the arterioles in all other parts of the body are contracted. Nitro-glycerin, given under these circumstances, by its action upon the vaso-motor centers, overcomes the contraction of the arterioles, wherever it exists, and the previously anemic capillaries are distended with blood.

It cannot always be apparent whether the congestive, or the anemic condition is the cause or the result of the pain, but this fact remains; that if the remote capillaries are filled with blood, and the circulation in the structure involved is restored to the normal, the pain or other abnormalities are relieved, which shows, at least, that some disturbance of the blood-supply was the cause of the pain.

A very common and severe pain, which is most frequently produced by congestion, is dysmenorrhea. Throbbing, aching and pricking sensations in the womb are complained of, previous to or during the first hours of menstruation. Degeneration and exfoliation of the uterine mucous membrane proceeds slowly. The distended or congested capillaries cannot disgorge themselves when covered by this firmly organized membrane as they can later, when covered by one that is softening, breaking down, and desquamating. The object of treatment in these cases is to relieve the uterine and ovarian congestion by diverting the blood to other parts of the body, and this can be accomplished by ad-

ministering one granule of glonoin every half-hour until fullness of the head or flushing of the face is produced, after which one granule may be given every hour or every two hours. Nitro-glycerin (glonoin) may be employed for this purpose every month, without resulting in any harm to the patient.

That most dreaded disease, angina pectoris, which in its true form is accompanied by pallor, is, fortunately, very often relieved by dissolving two granules of glonoin in the mouth, or by giving the same dose subcutaneously every fifteen minutes.

In the treatment of all diseases of the heart, where feebleness of its action is particularly marked, as in fatty degeneration or in dilatation, the circulation in remote parts is improved, the heart is relieved of undue pressure, and is stimulated to increased activity by the administration of nitro-glycerin. In all cases of syncope, and in so-called heart-failure, which occur, frequently in pneumonia, typhoid fever, hemorrhage and in diarrhea, glonoin, hypodermically given, is undoubtedly our most efficient remedy. It often restores life when all indications seemingly point to dissolution.

For these cases, one or two drops of a one per cent solution, or three or four granules dissolved in hot water, may be injected every fifteen minutes, until there is some evidence of recovery.

No physician should be without glonoin in his emergency case. There is no remedy which can be used in the treatment of collapse that is so

quick and sure in its action. Paroxysms of asthma, especially when the expectoration is scanty, migraine, facial neuralgia, hiccough, sea-sickness, reflex vomiting, toothache, vertigo and tinnitus aurium are reported by various authorities as having been cured by the use of nitro-glycerin.

In the cases last mentioned, if the face is flushed, relief does not usually follow the use of this remedy, but when the face is pale, good results may be expected.

The therapeutic value of glonoin depends upon its power to relax the small arteries and flush the cutaneous capillaries. If they are already distended with blood, the remedy is of no value. One granule should be administered every half-hour until headache or throbbing in the temple is produced; the dose may then be given every two hours. A number of physicians have reported cases of asphyxia, resulting from inhalation of illuminating gas, in which recovery speedily followed hypodermic injections of 1-50 of a grain of nitro-glycerin.

This remedy should be used, therefore, in all cases of asphyxia, in asphyxia of the new born, in cases of drowning, hanging, also in narcosis produced by ether or chloroform. The congestive stage of malarial fever or of any inflammatory disease may be aborted by means of this remedy. Nitro-glycerin is undoubtedly the most rapid and reliable divertant of the blood-pressure known, and should therefore be more extensively used in the treatment of acute and chronic inflammations, for, by distributing the blood to

remote parts and equalizing the blood-pressure, the diseased structure is relieved of its congestion and cure must frequently follow.

This remedy should always be used in the treatment of acute and chronic Bright's disease. It is of especial value when the pulse is hard and firm and the arteries are small and narrow. Glonoin overcomes the capillary constriction, giving a better circulation through the peripheral vessels, and restores the circulation within the kidneys to the normal state. Wonderful results have been produced by its use in this disease. It should be given in two granule doses every three hours. Its effect should be carefully watched and, if physiological manifestations are not produced, the dose should be carefully increased.

Bartholow advocates the use of nitro-glycerin in the treatment of anemia. It improves the circulation in remote structures and increases the energy of the heart. There is no doubt that in many cases anemia results from inadequate circulation of the blood because of feeble action of the heart. Many diseases, concomitant with feeble cardiac movement, have their origin in poor circulation through some one of the organs. These diseases cannot be treated through that organ but only by improving the condition of the heart. So it is with anemia, better results may be obtained in many cases by giving heart-tonics or heart stimulants than by giving preparations of iron.

CHAPTER XXVII.

HELENIN. (GLU.)

Standard granules—gr. 1-67, gm. .001; gr. 1-6, gm. .01.

There is only one use that the writer has found for helenin, and that is in chronic hoarseness. It aggravates acute inflammation by making the mucous membrane dryer and thus increases the irritation. It should be given a trial in all cases of chronic or subacute hoarseness. It is of particular value in those cases where hoarseness comes on towards evening, or when it occurs by being on the water after night. Two granules allowed to dissolve in the mouth every two hours is the dose. Usually in these cases there is no mucus forming. If it is desirable to increase the mucus, two or three granules of emetine may be given in conjunction with helenin.

CHAPTER XXVIII.

HYOSCYAMINE, HYOSCINE (ALK.)

Standard granules — Amorphous hyoscyamine, gr. 1-250, gm. .00025; crystallized hyoscyamine, gr. 1-1000, gm. .0000625.

Dose—Of amorphous hyoscyamine, one to two granules every half-hour until pupils dilate or until dryness of the mouth and throat are produced. Then give a dose every two hours, if needed. Stop if relief is obtained or if dilated pupils and dryness of the mouth are produced.

Hyoscine hydrobromate granules, gr. 1-1000, gm. .0000625.

To produce hypnotic effect, gr. 1-100 is necessary.

The seeds, leaves and flowering tops of hyoscyamus niger contain the alkaloids hyoscyamine and hyoscine. "The dried seeds yield from 0.08 to 0.16 per cent and the leaves 0.042 to 0.224 per cent of hyoscyamine."—*National Dispensatory*. There are two forms of hyoscyamine, the amorphous and the crystalline. The former is prepared in granules containing 1-250 of a grain, gm. .00025, and the latter in granules containing 1-1000 of a grain, gm. .0000625.

The writer uses only the amorphous from which he obtains full physiological effects. Hyoscine, as an alkaloid, is seldom used, the preference being given to its salt, the hydrobromate, which is prepared in granules containing 1-1000 of a grain, gm. .0000625.

PHYSIOLOGICAL EFFECTS.

When hyoscyamine is taken in doses of one or two granules every half-hour, there is soon perceived dryness of the mouth and throat, dilatation of the pupils, increase of the number of pulsations and respirations, and redness of the face. If the dose should be continued after these effects are noted, delirium, illusions and hallucinations would occur. Hyoscyamine acts upon the sympathetic nervous system, and when dosimetrically prescribed (that is, in small doses) it stimulates the vasomotor centers and increases the arterial tension. Larger doses produce opposite effects. Hyoscine and hyoscyamine are similar in their action, and may be used interchangeably. Hyoscine is more powerful and is more likely to produce delirium. It should always be used in smaller doses than hyoscyamine.

ATROPINE AND HYOSCYAMINE.

Atropine and hyoscyamine are, physiologically, and therapeutically, similar in their action and may be used in the treatment of the same class of diseases. Hyoscyamine has one decided advantage over atropine, in that it possesses greater hypnotic properties. It is, therefore, used in cases of acute and chronic mania, in delirium tremens and in fevers, when accompanied by great mental excitement.

HYOSCINE IN MENTAL DISEASES.

As the mental excitation of the insane is one of its chief indications, this remedy has been extensively used by those specialists who have

charge of this unfortunate class of patients. Prideaux declares "that it is the most reliable narcotic we possess."

Coleman and Taylor say that, "hyoscyamine never fails to act as a prompt and powerful sedative in cases of mental excitement, and that no bad after-effects follow."

Hyoscyamine, in doses of 1-120 to 1-60 of a grain, was found by Lemoine "to be a safer, more certain and more efficient hypnotic, in acute mania, than hyoscine in similar cases." Kobert regards "hyoscine as a feeble narcotic for healthy men. In mental diseases, on the other hand, it acts so powerfully that no remedy can rival it." The great weight of authority seems to be in favor of the use of hyoscyamine, in preference to that of hyoscine.

Both of these alkaloids may be given hypodermically, and they then produce their effects very rapidly. Sleep usually follows within ten or fifteen minutes when hypnotic doses have been given. In order to produce sleep, it is better to give one large dose than several smaller doses; 1-125 of a grain should never be exceeded as an initial dose, because of the peculiar susceptibility shown by some patients to the influence of this drug. This may be repeated within half an hour and may be gradually increased day by day until 1-60 of a grain has been given at a single dose. Some physicians have given as much as 1-10 of a grain with no bad results.

Large doses should not be given unless it has been found that smaller doses are without effect. The object should be, always, to obtain results

with as small a quantity of medicine as possible, and not try to see what large amounts patients can take without being poisoned. Hyoscyamine is comparatively a harmless remedy when given in medicinal doses, and, when given according to the rules laid down by Professor Burggraeve, no harm can possibly result from its use. Unpleasant symptoms, which have resulted from large doses, such as dizziness, muscular weakness and delirium, fortunately, have rapidly and completely subsided. Delirium or other unpleasant effects produced by hyoscyamine can be easily modified by the hypodermic injection of gr. 1-4 morphine.

In all spasmodic affections of the involuntary muscles, as asthma, laryngismus stridulus, enteralgia, uterine, vesical, renal and biliary colic, and in recent hernia, one granule of hyoscyamine dissolved in hot water and given every fifteen minutes will usually relieve pain and muscular spasm after several doses have been taken. The administration of this remedy may be persisted in until the pupils are dilated or until the mouth becomes dry. If the patient has derived no benefit by this time, hyoscyamine is powerless to afford relief in this case, and something else must be tried.

Burggraeve particularly emphasizes the usefulness of hyoscyamine as an aid in the reduction of hernia, after taxis has failed. Dr. W. C. Abbott reported a case in May, 1894, of a large scrotal hernia which could not be reduced by taxis, but was quickly restored after the patient was under the influence of hyoscyamine. In all

spasmodic coughs, hyoscyamine usually proves to be an excellent remedy. It may be combined with codeine, lobelin or emetine. In cases of irritable bladder, in which there are painful contractions, after micturition, this remedy acts as a sedative. In the tenesmus of dysentery, or in intestinal colic, hyoscyamine often relieves the pain of these diseases. Two or three granules given at bedtime frequently prevent the night-sweats which accompany phthisis and other exhausting disorders.

As an adjunct to cathartics, hyoscyamine is of value, since it prevents the griping which this class of remedies usually produces. In affections of the nervous system, in which the voluntary muscles are abnormally influenced to excessive action, as in paralysis agitans, palsy, senile trembling, hydrophobia, tetanus, and even in mercurial tremor, hyoscyamine, according to Charcot and Oulmont, either works a cure or affords relief. It must be pushed until dilatation of the pupils are produced.

Hyoscyamine is a very useful remedy in treating the diseases of children, and may be used successfully to allay spasms, to soothe fretting and cross infants who are suffering from teething and, especially, to quiet those colicky children who cry almost constantly. Children bear hyoscyamine better than they do most alkaloids and require larger proportional doses.

The rule for the administration of aconitine will not do in the case of hyoscyamine, for children require just twice as many granules of hyoscyamine, gr. 1-250, as of aconitine, gr. 1-134.

The following rules apply to the administration of this drug:

Infants from one to three months old require one granule dissolved in twenty-four teaspoonfuls of water.

Infants from three to six months old require two granules dissolved in twenty-four teaspoonfuls of water.

Infants from six to nine months old require three granules dissolved in twenty-four teaspoonfuls of water.

Infants from nine to twelve months old require four granules dissolved in twenty-four teaspoonfuls of water.

A child of two years requires six granules dissolved in twenty-four teaspoonfuls of water.

A child of four years requires ten granules dissolved in twenty-four teaspoonfuls of water.

For children twelve years old and upwards, and for adults, one granule of hyoscyamine is the dose. In prescribing for older patients, the doses may be given as frequently as every fifteen minutes, but for young children every half-hour or every hour will be often enough. The pupils should be watched and when they dilate, hyoscyamine must be withdrawn or given at greater intervals. Do not push it beyond this point. If it has given no relief, none can be expected by pushing it further. It shows that the muscles are thoroughly relaxed.

CHAPTER XXIX.

LOBELIN (CON.)

Standard granule—Gr. 1-12, gm. .005.
Dose—Two to three every half-hour to one hour.

Lobelin is the active principle of lobelia inflata or Indian tobacco, and is prepared in granules containing gr. 1-12, gm. .0005. When lobelin is given in large doses it acts as a powerful emetic but so great is the accompanying depression that it should never be administered solely for this purpose.

When it produces its emetic effect, large quantities of mucus are formed, in fact, all the mucous glands are stimulated to increased activity. A patient under the influence is compelled to expectorate considerable mucus.

As this remedy then, in emetic doses, stimulates pharyngeal and bronchial secretions, also the gastric and intestinal, in smaller doses it does so to a lesser degree and may be applied in those conditions where scanty secretions of these mucous membranes lead to abnormal or annoying symptoms, such as dry, irritating coughs or constipation. As it produces complete muscular relaxation, its application in asthma is followed by good results.

Lobelin must be cautiously given to debilitated patients.

In all dry, spasmodic coughs, two or three granules may be given every hour until the sputum is free and loose. The same dose may then be given every two or three hours.

In asthmatic attacks two or three granules should be given every half-hour until nausea or improvement of the symptoms occur.

In chronic constipation, particularly in children, it may be given in doses of one granule three times a day. To adults, two or three granules three times a day. This treatment must be persevered in and is particularly applicable when the evacuations are dry. If no other remedy is at hand, it may be given in doses sufficiently large to produce relaxation in cases of strangulated hernia.

CHAPTER XXX.

MERCURY.

Standard granules—Mercury bichloride, gr. 1-134; gm. .0005; mercury biniodide, gr. 1-67, gm. .001; mercury cyanide, gr. 1-134, gm. .0005; mercury protoiodide, gr. 1-6, gm. .01; mercury protoiodide, gr. 1-2, gm. .03, (Tablets only); mercury salicylate, gr. 1-12, gm. .005; calomel, gr. 1-67, gm. .001; calomel with aromatics.

The preparations of mercury rank with our most important remedies for the alleviation and cure of certain conditions. When indicated they rarely fail to accomplish results desired of them. They are probably the best germicides in our possession and upon this particular quality rests their power to alleviate and cure, and they have justly earned for themselves the title of "specific" in the treatment of syphilis. To prove their germicidal power, thoroughly wash any septic wound with a solution of the bichloride of mercury one part, water one thousand parts for immediate dressing, and 1-10000 when dressings are to remain in place. Probably bichloride solution used in preparing and cleaning the skin for operations, cleansing wounds, and afterwards as a dressing, has done more to prevent septicemia than any other drug.

In the treatment of gonorrhea by local injections or applications gr. 1 to one pint of water, ranks about equal to permanganate of potash. In injecting cavities or using it locally in external

wounds or even in handling the solution by nurses and physicians, poisoning has frequently resulted. The physiological effects of mercurial preparations can be as easily studied this way as by its internal administration, for no matter how introduced into the system, through the sound skin, abrasions, wounds, vagina, uterus or stomach, the symptoms are the same. Thirst, gastric pains, vomiting of bloody mucus, bloody diarrhea, tenesmus and in fatal cases, collapse. The continuous external application, as when used in skin affections, frequently produces salivation and copious diuresis and diarrhea. All of these latter symptoms, salivation, diuresis and diarrhea may be produced by the internal administration of even small medicinal doses, and when a patient is put upon mercurial treatment it is necessary to tell him that if any of these symptoms occur the dose should be diminished or stopped entirely until he can consult his physician again. The patient should frequently forcibly close his teeth in order to determine if tenderness exists. If the flow of saliva is increased, or if the metallic taste is observed. If any of these conditions do occur it indicates that the system is fully under the effects of mercury and that, if persisted in and the same dose continued, the salivary glands will become tender, the gums become ulcerated, the teeth loose: so much so that they sometimes drop out. The breath, even at the beginning, becomes so fetid that it is frequently an early means of discovery that salivation exists.

In the treatment of salivation first remove the

cause. If mercurials are necessary, as in syphilis, reduce the dose. For excessive flow of saliva give atropine. As a mouth wash use chlorate of potash solution. Give it also internally, and opiates for the relief of pain.

In acute poisoning by swallowing large amounts, particularly of the bichloride, the symptoms come on more quickly and are more severe, viz., pain in the stomach, constriction of the fauces, vomiting, severe cramps, diarrhea, great muscular weakness, faintness, increased urination and collapse. The best antidote is the whites of eggs, six of which should be administered as quickly as possible. Allow them to remain half an hour, wash out the stomach with a syphon tube, then give more whites of eggs and let them remain. Give opiates for pain and atropine, gr. 1-40 for collapse.

From some of the poisonous effects produced by mercurials, useful medicinal applications can be made. It has just been observed that no matter what preparation of mercury or how it is introduced into the system, if the amount is large, diarrhea and polyuria occur. Calomel is very frequently and safely used in physiological doses to successfully produce these results.

CALOMEL AS A CATHARTIC.

When 1-10 grain doses of calomel are given every hour for ten or twelve doses there is usually produced a thin, dark greenish or brown stool. As calomel is sometimes slow and uncertain, it is usual to give Saline Laxative or Epson salts after the last dose has been taken, to insure

prompt action. Calomel is of particular value in so-called biliousness, expressed by yellow conjunctivæ, brownish, white-coated tongue, headache, fever and vomiting of bile; conditions which certainly show an excess of bile. Calomel acts by checking the activity and secretion of the liver and produces a stool, bilious in its appearance, because of the excess of bile in both stomach and intestines. Many experiments, where biliary fistulæ exist, show conclusively that calomel does not increase the flow of bile, but that salicylate of sodium and podophyllin are true cholagogues.

CALOMEL IN GASTRO-INTESTINAL SEPSIS.

In constant and excessive vomiting, whether produced by improper eating or by gastritis, 1-20 gr. of calomel every half-hour taken dry on the tongue and swallowed with a teaspoonful of water, generally acts as a sedative and stops the vomiting. Calomel is a very useful remedy to produce aseptic conditions in the gastro-intestinal canal, because that part which is absorbed into the circulation is eliminated by the intestinal glands and is brought into actual contact with putrid matter and disinfects it. It is particularly useful in a treatment of summer diseases of children which are nearly always brought about by eating unwholesome or improper food, which undergoes fermentation instead of being digested. The treatment should be begun in these cases by giving 1-10 or 1-20 of a grain of calomel every one-half hour or every hour until there is a decided change in the color and character

of the stools. This applies to cholera infantum particularly and is most useful where vomiting is excessive.

TYPHOID FEVER.

In typhoid fever, a purely septic disease, whether there is diarrhea or constipation give 1-10 grain doses of calomel every hour until the stools are changed from the usual light color to a dark brown or green. Generally after this change has been produced fever declines and the patient's progress begins to be one of improvement. If fever should return calomel may again be administered as before. The fact that even severe diarrhea exists, does not contraindicate its use. The object is to sterilize the intestinal canal. Calomel treatment should be followed up throughout the course of the disease by sulphocarbolates.

SYPHILIS.

In the treatment of syphilis there is no remedy that can render such valuable service as the mercurials. It is a specific in the secondary stage. The choice of the remedy varies and some of the best physicians in the world have used either bichloride, biniodide, cyanide and protoiodide. Each one of these remedies has its adherents and each is equally effective in the hands of its advocates. The writer prefers the bichloride and gives it in doses ranging from 1-32 of a grain to 1-10 of a grain after each meal, gradually increasing the dose until the flow of saliva is slightly increased, unless the symptoms abate before this is produced. The remedy

is then continued in the same or perhaps in smaller doses. At this point, when the saliva is increased, a full physiological effect is obtained and symptoms begin to abate. If the bichloride fails, some of the other salts may then be submitted. It is always advisable along with this treatment to give such tonics as the arsenate of strychnine and iron.

CALOMEL AS A DIURETIC.

A very important application of calomel is made from the fact noted that diuresis is produced in mercurial poisoning. There is no remedy that can be so successfully used as a diuretic in the treatment of dropsy of cardiac origin. It is not so applicable in dropsy which originates from the liver or kidneys. The treatment consists in giving three grains of calomel three times a day for three days. In order to illustrate this point a case will be cited showing these facts. A patient, aged fifty years, with heart lesions had dropsy of the feet and legs extending upwards into the abdominal wall. The legs and feet were fully three or four times their natural size. The amount of urine passed in twenty-four hours was only four ounces. All diuretics and hydragogue cathartics failed to make any impression on this dropsical condition. Three grains of calomel three times a day were given for three days. Not until the fourth and fifth day was there any marked change in the quantity of urine. It then began to flow freely and from eight to ten pints were passed during the twenty-four hours for several days. This

very rapidly reduced the dropsical swelling and restored the patient to a normal condition. He remained so for several years never having a return of dropsy. It may be necessary in such cases to prevent calomel acting on the bowels, for if it produces diarrhea there is no renal action, and in order to exclusively produce this renal action ¼ grain of opium or ½ grain of codeine should be given with each dose of calomel. If calomel has already produced catharsis wait two or three days and then give it again properly guarded with an opiate. This treatment can be repeated several times, that is, whenever the dropsical effusion reappears.

ELIMINATION OF MERCURIALS.

When calomel or other mercurials are taken for a very long time and in large doses and are not eliminated as rapidly as ingested, they are reduced to the metallic state, and stored up in the "kidneys, liver, spleen, intestines and muscles. Those structures contain the most that are named first." It has been said that when heroic doses of calomel, 20—30 grains, were formerly given, that the metallic mercury could be found and even shaken out of the dried bones of those who during their life had been subjugated to this calomel treatment. Be this as it may, from this incident evidently originated the saying that "calomel goes to the bones" and is rarely eliminated. It is a very peculiar fact, that after a single dose of calomel, or after a very short period of mercurial treatment even in small doses, mercury can be found in

the intestinal canal six months after the last dose has been taken and that mercury is found in the urine also many months after the treatment has been stopped. Mercury is eliminated chiefly by the kidneys, also by the salivary glands, pancreas and intestines. It has also been found in the milk of nursing women. Whenever any organ eliminates a medicine its functional activity is stimulated. If poisonous doses are taken that organ is irritated even to inflammation and disintegration. Its elimination by the salivary glands produces all the symptoms of salivation, as metallic taste and gingivitis, by the mercury in the saliva being brought into actual contact with the tongue and gums. That the kidneys are particularly and actively stimulated by mercurials is shown by polyuria produced both in acute poisoning and by medicinal doses. Tube casts and albuminuria frequently follow as a result of mercurial poisoning. These symptoms, however, pass away when the remedy is no longer taken. In existing inflammation of the kidneys calomel cannot produce such good results when given for dropsical conditions in Bright's disease, because calomel of itself produces desquamation and albuminuria.

DIPHTHERIA AND CROUP.

In the treatment of diphtheria and inflammatory croup the very first medicine to be given is small doses of calomel: gr. 1-10 in powder should be dropped upon the tongue every hour until effects are produced, that is, until the stools become dark. This is often followed by a very

rapid decline of symptoms. The internal administration of sulphide of calcium and strychnine should be kept up during the entire course of the disease. The hypodermic injection of antitoxin should also be considered part of the routine treatment in diphtheria. In inflammatory croup iodized calcium is the cardinal remedy.

CHAPTER XXXI.

MORPHINE AND CODEINE.

Standard granules—See text.
Dose—According to effect desired.

The following preparations are found in the alkaloidal granule lists. Morphine hydrobromate, gr. 1-67; morphine muriate, gr. 1-12 and gr. 1-67; morphine sulphate, gr. 1-12 and gr. 1-67; and codeine sulphate, gr. 1-12 and gr. 1-67.

Morphine and codeine are the only derivatives of opium that will be considered under this subject. One-fourth of a grain of morphine is therapeutically equivalent to one grain of codeine. Codeine is certainly milder in its action than morphine and for very severe neuralgic pains, and in severe colics, hypodermic injections of morphine and atropine should be given the preference. In all ordinary abdominal or gastric pains, codeine will bring prompt relief and should always be used, except in emergencies. Codeine does not, as a rule, produce such disagreeable after effects as nausea, headache and a generally bad feeling, as does morphine. It is not as mentally stimulating and therefore has the great advantage over morphine in not producing so readily a habit. The application of these two alkaloids will be considered later under various headings of disease.

When morphine gr. ¼ is given hypodermically

for the first time to an adult in perfect health, it produces flushing of the face and a feeling of warmth of the general integument, fullness of the head, increase of the heart's action, but the respiratory action is diminished, vertigo, nausea and vomiting occur. These symptoms begin, as a rule, within five to ten minutes, and some of them last for many hours. Sleep may sometimes be produced, but, as a rule, wakefulness follows, or, if sleep should come, it is uneasy and restless. Urination is difficult; there may be copious perspiration. For a day or two thereafter the mouth is pasty, tongue coated and the appetite may be poor. Even when given to combat disease, some patients are so susceptible to its action that the above symptoms are magnified and the effects of morphine are worse to bear than the disease.

Morphine, as a rule, like all narcotics, in moderate doses, is at first stimulating, exhilarating and produces mental excitation and a feeling of well-being, provided it agrees with the patient. The larger the dose, the shorter is the period of exhilaration or excitement. The second stage, that of mental and muscular depression, sleep, later anesthesia, coma and paralysis come very rapidly when larger doses are taken. Alcoholics are similar in their action, small doses excite while larger doses quickly produce coma and paralysis.

The stage of excitement when morphine is taken in moderate doses, even in those habituated to its use, shows itself in flushing of the face, brightness of the eyes, greater animation and

talkativeness. All pains, suffering, anxieties or apprehensiveness pass away. A spirit of supreme calmness and ease, possibly a state of delicious half wakefulness, which borders on dreamland, and bright, happy visions take possession of a mind previously racked with terrible foreboding, filled with petulance, irascibility and suspicion. The agonizing pains that rend mind and body in these unfortunates, cannot possibly be comprehended by those who do not personally know. They require our utmost sympathy and skill. Humanity requires our united and best efforts, to try and prevent the spread of the terribly agonizing and degrading morphine habit.

Pain is so easily removed. The severest pain must succumb to morphine. In accute pains there is not the same danger as in prescribing for chronic pains or for those which occur periodically. Dysmenorrhea probably produces more victims of the morphine habit than all other diseases combined. Try all medicine before resorting to opiates. Far better remove the ovaries than run the risk of forming a habit that is worse than death. Do not use opiates in dysmenorrhea.

It is said that physicians constitute almost half of the number of opium fiends. What a sad reflection upon such a noble profession. Better suffer pain; it cannot last always. Try glonoin, cicutine, hyoscyamine. If an opiate seems to be demanded, try codeine. It will relieve most pains without producing the stage of excitement.

Opiates, like alcoholics, are frequently taken, not so much for their secondary effect, as for the primary one, exhilaration, and if narcotics had

not the power to produce mental excitation, or a feeling of well-being, but could produce only mental and muscular depression and mental stupor, there would be fewer victims of these substances. After the stimulating and narcotic effects of opiates have passed away, particularly in those who are habituated to their use, there remain both mental and physical depression, a generally bad, "out-of-sorts" feeling, which nothing but further resort to the same medicine will dissipate. There is no substitute that can relieve the intense mental anguish and physical pain of the opium victim, except opium. With alcoholics it is similar. Nothing but alcohol will relieve alcoholic suffering in the confirmed drinker.

While opiates relieve pain and anguish, soothing and lulling to comfortable, sweet, dreamy repose a body and mind seemingly on the verge of being hopelessly swept to destruction in a whirlwind of physical pain and mental despair, the continuous use actually produces agonizing pains, disturbed mental conditions and insanity. It certainly is strange that narcotics used to relieve physical and mental disorders, will produce similar conditions, only greatly magnified, if these same medicines are but continued in the sick, or if continuously taken in those apparently well. Let it be repeated that opiates and alcoholics, cocaine, chloral, and other remedies of this class, create deplorably painful mental conditions which demand frequent repetition of the drug, which, if persisted in, inexorably leads to moral perversity,

mental decay and insanity. Surely this ought to make physicians hesitate and weigh very carefully the advisability of giving narcotics to relieve slight pains, particularly in dysmenorrhea. *Remember, opiates, if taken frequently, will produce greater pains than those they are given to relieve.*

We learned that opiates produce muscular inactivity and relaxation. It blunts sensibility; quiets mental activity or excitation. Inasmuch as it checks secretions and muscular activity, it is particularly useful in cases of diarrhea. As many pains are produced by muscular contractions, as colics, these are successfully treated, because, opiates produce muscular relaxation, and in large doses complete muscular paralysis.

As many pains occur during inflammation, the congestion and exudation following produce pressure upon the nerves and cause pain. Opiates first lessen, or deaden, nerve sensibility and coincidentally disperse the increased blood supply to other parts of the body. In severe pain, after a hypodermic injection, pain is coincidentally relieved, as the integument becomes warm in consequence of its filling up with blood. Diverting the blood from the seat of pain by means of counter irritation, as baths, poultices, local applications of any kind, glonoin or hot drinks is a very favorite method employed to afford relief. This is vaso-motor therapy.

The indications for the administration of opiates are very clear; to relieve pain, to quiet mental and muscular activity, and incidentally, but a very important application, is the relief of

diarrhea. As opiates control the blood supply, they are necessarily applicable in the treatment of inflammations, but the fact that opiates also control muscular movements, no doubt largely aids in their power to cure some inflammatory diseases, such as peritonitis and pleurisy.

PERITONITIS.

No single remedy has yet equalled the opiates in the treatment of acute peritonitis after inflammation is established. As this disease is of an inflammatory nature, it is consequently one that can be aborted. For this purpose active treatment should be inaugurated, if possible, during the first thirty-six hours of the attack. This is best accomplished by giving a large dose of seidlitz salts, four teaspoonfuls, or ordinary Epsom salts, one or two large tablespoonfuls. The object of producing catharsis is first, to unload the bowel of its decomposing mass, or gas or any irritating substance that may be present, also to produce an open and unobstructed passage way which lessens very greatly, if not entirely, the danger of tympanitis and paralysis. The second object of catharsis is to deplete the peritoneum. At this stage it is highly congested, or possibly inflamed. The capillaries are engorged. Relieve this congestion by draining the capillaries of their fluid into the bowels, which passes out as watery stools, and very often this is practically the end of the disease. After catharsis has been induced and if pain is still present, the opiates are demanded. There is no set dose. Give enough of whatever preparation is selected

to subdue pains. Give it only in solution or hypodermically. Repeat the dose every one or two hours until relief is obtained, then give it as often as the pain becomes severe. Nothing is to be accomplished by allowing the patient to suffer, and as long as the pain is great it shows that full physiological doses of opiates have not been reached. The size of the dose required is of no consequence. Give enough to relieve pain, if it takes one-half grain of morphine every hour. To relieve pain should be the principal object of treatment after thorough evacuation of the bowels, and by so doing, the inflammation itself is undoubtedly being acted upon. If pain is not relieved, the patient derives no benefit from the treatment and the inflammatory condition is not under control. It is not necessary to completely narcotize a patient, or relieve every vestige of pain. Make the patient comfortable. While it may seem that morphine is given only to combat one symptom, pain; nevertheless the inflammation which produces pain is being actively antagonized by controlling muscular action and by equalizing disturbed circulation. When a remedy is indicated, push it until some result is obtained. As a rule, a symptom cannot be successfully treated unless the condition or disease which produces that symptom is of itself acted upon. Nowhere else is this axiom so applicable as in painful conditions.

In all acute painful conditions, with very few exceptions, morphine in solution, or hypodermically, should be administered frequently enough to bring relief. When relief is obtained,

lessen the dose or extend the time interval of administration. Opiates in pill, granules, tablets, or any other solid forms, should never be given when the tongue is heavily coated, dry, brown, glazed or cracked. If morphine is ever indicated in such conditions, give it cautiously and only by the hypodermic method. No doubt when the tongue is dry and glazed, the absorptive power of the stomach is very low. Pills given in this condition may accumulate in the stomach without being dissolved. Then when secretion and absorption are reëstablished, the great danger of all the pills being dissolved and absorbed within a few hours is apparent. Give medicines in fluid form when the tongue is dry or the secretions of the mouth are checked.

DIET IN PERITONITIS.

If vomiting is excessive, give ice water or Seltzers water and ice. Sometimes sipping water as hot as it can be swallowed, allays the nausea and vomiting. Milk generally increases the vomiting, and, as a rule, it should not be allowed during the severity of the disease, even when combined with lime water. Liquid peptinoids with creosote in teaspoonful doses in ice water every hour, is all the food that is necessary for four or five days. Creosote allays vomiting and prevents fermentation. If the patient objects to creosote, liquid peptinoids, plain, may be given. Solid food of any kind is not permissible. Beef broth made according to the directions given in the article on Zinc Sulphocarbolate, may be substituted for liquid peptonoids. When

tympanites is very great and the tongue dry and brown, apply flannel cloths wet with turpentine, and give fifteen drops of turpentine in an emulsion every three hours. Cloths wrung out of ice water, or ice bags, are frequently a grateful application. Strychnine arsenate as a tonic, sulphocarbolates as antiseptics, should be constantly given. Eserine is a remedy that will yet be extensively used, hypodermically, in order to produce evacuation of the intestines that are greatly distended, apparently paralyzed, and which refuse to be acted upon by medicines in general use. It produces evacuation by increasing peristalsis, or muscular contraction, and in this way should prevent paralysis and great distention. As a rule its action is very mild and gentle.

COUGH.

In the treatment of harassing and painful coughs few remedies are equal to the opiates in bringing relief. There is a class of physicians who are constitutionally opposed to treating symptoms. In their estimation such methods are unscientific. Fortunately this idea makes no material difference, when it comes to practice, as it can exist only in the mind. *Symptoms must be treated* and there is no way out of it. See article on aconitine. Opiates are used by all classes of physicians for the treatment of very irritating coughs, irrespective of the disease which produces it; provided the symptom, cough, is of itself sufficient to cause distress. Codeine should always be given the preference.

However, there is a compound granule, "morphine and potassium cyanide No. 1," by Hawkins, which has found great favor with the writer. Every doctor has some kind of a cough combination which, in his experience, he has found to fit the general run of winter coughs. This cough granule is composed of morphine sulphate gr. 1-64, potassium cyanide, gr. 1-96, tartar emetic gr. 1-64. As a rule, when adults have painfully distressing dry cough, either pain behind the sternum, pleuritic pains, or soreness throughout the entire chest, four granules are prescribed every one or two hours until some relief is obtained, then the number is reduced to two, or the interval lengthened to three or four hours. The indication is an annoying cough, painful or not, and it makes no difference whether it is laryngeal, bronchial, pneumonic or pleuritic. The effects are the same and the results are generally all that can be desired. To children above eight years of age, "morphine and potassium cyanide No. 2" is a valuable remedy. One granule may be given every hour until the cough is less severe, then the dose may be repeated every two or three hours. The dose of potassium cyanide is very small and this should not cause any hesitation on the part of the physician in prescribing it. The more spasmodic the cough, the greater the indication for this granule. A single granule is sufficient for administration to children. This granule will be found to be of excellent service in a large number of cases. It is reliable and rarely disappoints one's expectations.

Precautions should be taken in the use of

opiates in treating debilitated patients, particularly in capillary bronchitis in young children or in the aged. When the sputum in these cases is very copious, or the rales very moist, showing that large quantities of mucus are being secreted, opiates simply lessen the act of expulsion but do not decrease the secretion. As a consequence, the bronchi fill up with their own secretion and death is the result. Spirits of camphor, or apomorphine combined with strychnine, are proper remedies for these cases. In laryngeal irritation, where constant tickling sensations produce annoying and incessant hacking, gr. 1-4 codeine every one or two hours is the best internal remedy.

Codeine and emetine is an excellent combination for both adults and children. In pleuritic pains, with dry, hacking cough, give codeine sulphate gr. ½, every one or two hours until relief. If quick results are required, give hypodermic injection of morphine and atropine. Repeat frequently enough to give relief.

GASTRO-INTESTINAL DISEASES OF CHILDREN.

In cholera infantum, opiates should be given after the bowels have been acted upon by some cathartic, preferably calomel, followed by Saline Laxative. The first object should be to empty the bowels of their decomposing contents before giving opiates. If opiates are given first, the condition is made worse by locking up the fermenting mass, which produces more irritation, more pain and particularly fever, caused by the absorption of poisonous matter. Opiates must be sparing-

ly and cautiously used in all infantile diseases, because infants are extremely sensitive to the narcotic effects of this drug. Codeine should be given preference, and in the form of Anodyne for Infants, it has the writer's hearty endorsement.

In severe cholera infantum, if vomiting is constant, or the stools very frequent, and cannot be controlled by ordinary remedies, or if there are signs of collapse, a hypodermic injection of morphine, gr. 1-100, atropine gr. 1-200, will frequently give relief. It is probably true that hypodermic injections of morphine and atropine are not used frequently enough in cholera infantum. If there is timidity on the part of the physician about giving such a dose hypodermically to an infant, give half the amount and repeat it in an hour if necessary.

Generally in gastro-intestinal colic, or in diarrhea, it is the food or drink that produces these disorders. The importance then of properly regulating the diet is of the utmost importance. For fuller details regarding diet in disease see article on "Sulphocarbolates."

In tenesmus of the bladder, or rectum, no medicine relieves as quickly as codeine in ordinary cases, but in very severe cases, give hypodermic injection of morphine and atropine when quick action is required.

In the treatment of gastro-intestinal pains of adults, no remedy is of equal value to the opiates.

Cholera morbus is a disease that requires the services of a physician after his bed-time more frequently than any other. Few diseases are so

amenable to treatment and respond so promptly and so satisfactorily. Frequently all that is needed is a single hypodermic injection of morphine, gr. 1-4, atropine gr. 1-125. Sometimes a second dose is required and should be given if no relief is apparent within twenty minutes.

For pain and diarrhea following meals, three granules of codeine sulphate gr. 1-6 each will give relief. Repeat the dose every one or two hours until improvement is manifest, but regulate the diet.

WAUGH'S ANODYNE.

Waugh's Anodyne for Infants is composed of nickel bromide gr. 1-134, codeine sulphate gr. 1-67, powdered ipecac gr. 1-134, lithium carbonate gr. 1-25, anise gr. 1-134.

It may be difficult to comprehend how such small doses of nickel, ipecac and lithium carbonate can have any medicinal effect. The fact, nevertheless, remains that this combination is surprisingly useful when administered to infants who are fretting from teething, who are victims of colic or who are harassed by a troublesome cough. Infants do not cry and fret without cause. That cause is most frequently irritation produced by teething or it is gastro-intestinal colic. These two conditions are only too frequent, but, fortunately, we have for infants a very effective means for relief in Waugh's Anodyne. One granule in solution may safely be given to a child one month old. The dose can be repeated in half an hour and continued until relief is obtained. It may not be found

necessary to increase the number of granules for children upwards of one year. In very irritating coughs and in severe colicky pains, two granules may be safely given. It is safer, however, to give one granule every half-hour or every fifteen minutes until the desired result is obtained, than to give two every hour. The granule should always be given in solution, although, where the dose is not to be frequently repeated, children may hold the granule in their mouths, when it quickly dissolves. They readily take granules such as anodyne, emetine, nuclein tablets and others, with the belief that they are taking candy. This remark may not appear to be of much value, but, to the hard-working general practitioner, little things like these go a great way. Make the medication for our little friends as pleasant as is possible.

NEURALGIA.

In supraorbital neuralgia, sciatica or in rheumatic lumbago, injections of morphine and atropine at the seat of pain is always followed by relief. Frequently one such injection in recent neuralgia may permanently cure it. In hysteria, one of the quickest ways to end the attack is by giving morphine hypodermically. Great caution is to be used for fear of forming the habit. Paroxysms of pulmonary and cardiac asthma, angina pectoris all yield quickly to morphine when hypodermically given. The severe paroxysms of renal or hepatic colic are relieved by hypodermic injection of morphine and atropine; gr. one-fourth of the former may safely be

given every half-hour. All pain can be alleviated, provided the dose be large enough. There is little danger of narcosis as long as pain is severe. Give an average dose, gr. 1-6 to 1-4, and repeat it in half an hour if there is no amelioration. Only rarely is it necessary to give three such doses.

MORPHINE WITH ANESTHETICS.

A hypodermic injection of morphine and atropine should always be administered at least one-half hour before giving chloroform or ether. It eases the patient's mental anxiety. Anesthetics apparently produce narcosis sooner and easier than without it. Prolonged sleep is more likely to follow after the operation. Most important of all, it reduces reflex sensibilities, prevents shock, and lessens the danger of paralyzing the cardiac centers, which is the chief cause of death in the early stage of chloroform inhalation. Too much chloroform entering the blood during the first few inhalations is carried to the cardiac center and completely inhibits its action. Morphine and atropine previously administered lessens the sensibility of this center to the paralyzing action of chloroform.

HYPODERMIC USES.

When morphine is used hypodermically, atropine should always be administered with it, because it prevents unpleasant cardiac depression and nausea, headache and generally uncomfortable feeling in patients who are highly susceptible, or over sensitive to narcotic influence of opiates.

No remedy acts as quickly as does the hypodermic injection of morphine and atropine and brings comfort and hope to the mentally depressed victim of cholera morbus, in whom vomiting, cramps and diarrhea, each seem to be struggling for supremacy. In all forms of colic, the hypodermic injection should be used, particularly if the patient's stomach is full of food, or if there is vomiting. Persistent vomiting from any cause, local or remotely reflex, frequently yields to the hypodermic method. In the beginning of labor, when uterine contractions are irritatingly painful and are unaccompanied by any apparent progress, a hypodermic injection brings prompt relief. So too, when labor pains are constant, the uterus being in a condition of tonic contraction, is rigid, with no advancement of the head, a hypodermic injection frequently overcomes this condition and starts labor to progressing favorably, often bringing it to a rapid termination.

The usual dose of morphine, hypodermically, is one-sixth to one-fourth of a grain, and this may be repeated several times at intervals of fifteen to thirty minutes. It should be remembered that one-half of a grain is the smallest dose of morphine known to have caused death in an adult. Morphine and atropine are physiological antagonists. The former contracts the pupil while the latter dilates it. In a case of poisoning by either medicine, the other is used as an antidote, but only so far, however, as to overcome the condition of the pupil. In conjunction with atropine, codeine phosphate may be admin-

istered hypodermically, in doses of one-fourth to one-half grain, and the injection repeated two or three times at intervals of half an hour or an hour.

Prescribing opiates for children is always hazardous. As a rule they bear the drug badly; they are more susceptible to its evil influences than they are to those of any other medicine. There is not the same certainty in calculating the proper dose of an opiate for children which shall be entirely free from danger as in calculating doses of other poisonous drugs. Again, idiosyncracies exist to a greater extent than among adults. For these reasons, the mildest of the derivatives of opium, that which possesses the fewest objectionable features and is freest from danger, should always be used when prescribing for children. The alkaloid which possesses all these qualities, and is equal to morphine in many respects, while superior to it in others, is codeine.

Opium or morphine should always be cautiously prescribed for infants. Codeine is the remedy when an anodyne is indicated. The diseases which probably require opiates more frequently than any other class are those of the gastro-intestinal canal; the pain is usually severe and the patient should have immediate relief.

Gastro-intestinal pains are most frequently produced by the presence of indigestible food, which by fermenting evolves gases and produces irritation. Naturally, the best method for treating such conditions, instead of giving opiates to relieve pain, the result of which is to

check peristalsis and to lock up decomposing material within the bowels, is to clean out the stomach and intestines.

This can be accomplished by giving an emetic, as emetine or apomorphine, and a cathartic, as calomel or Abbott's effervescent seidlitz salt. This should be followed by the administration of zinc sulphocarbolate.

If the pain persists, Waugh's Anodyne, spirits of camphor, or monobromated camphor may be given in hot milk, or hyoscyamine, which is an excellent anodyne, may be given in solution to children and in granules to adults. If colicky pains are of daily or almost of continuous occurrence with infants, there is usually something wrong with the diet; this should be corrected, and pepsin, diastase or papayotin given with each meal.

When, however, it is absolutely necessary to give opiates to infants, let it be, as indicated above, codeine combined with hyoscyamine or Waugh's Anodyne. While frequent administration of opiates in small doses may not always give such prompt relief as a single large dose, the element of danger is eliminated, and only so much of the medicine given as is necessary to relieve the pain. In this, too, the bad after-effects, which are produced when larger doses are given, are avoided. It frequently requires several days for the nausea, vertigo and foul breath to disappear, after a large dose has been administered.

Very early in my practice I received a severe lesson with regard to administering opiates in

case of delirium tremens. The patient was quite wild and was given a hypodermic injection of morphine gr. 1-4, and atropine gr. 1-125. Within an hour, there being no effect produced whatever, the second injection was given similar to the above. This produced sleep. Before leaving the house, I went in to see the patient and was amazed to find that he was breathing very slowly indeed. Respirations were down to two in one minute. Counting this patient's respiration was about the longest minute I remember ever having passed. The second respiration began just before the minute was closing. The pulse was beating normally. We worked with this patient for some time and respirations were increased to four within the minute, and as the pulse and respiration now seemed fair, I left the patient for the night. The next morning, being somewhat anxious about the case, I visited him quite early and found that he was up and out. The lesson that was impressed upon me was that morphine is an extremely dangerous remedy to give in cases of this kind and I have never used it since for that purpose. Six granules of cicutine every two hours will do better work without fear of doing harm.

Never give morphine to infants suffering from capillary bronchitis. Best not give it at all to infants with acute lung diseases of any kind, because their muscles of respiration are easily paralyzed by opiates. Never prescribe it for infants unless there is severe meningeal or abdominal pain. Give it in small doses, repeated every half-hour until relief is obtained. Then

stop its administration. Never give opiates when the tongue is dry or glazed or when there is any tendency to somnolence or low muttering delirium. In œdematous or dropsical effusion, particularly if spontaneous diarrhea is present, encourage the diarrhea but do not check it. In delirium tremens, opiates should not be used to subdue mental and muscular excitations. Chloral, bromides, cicutine and capsicin are to be preferred.

Never give opiates when the lungs are full of moist rales, when the skin is cold and clammy and the patient is debilitated. Great caution should be used in giving opiates to the aged, particularly in frequently repeated doses. Their eliminative powers are not active and this causes this drug to be retained in the circulation longer than in younger people.

TREATMENT OF ACUTE OPIUM OR MORPHINE POISONING.

Produce vomiting as quickly as possible by giving hypodermically apomorphine gr. 1/8 or by giving alum, salt water, ipecac, zinc sulphate, or any emetic at hand. Large doses are required if narcotic effects have been already produced. If a syphon tube can be introduced into the patient's stomach, it should be done at once, even in preference to giving an emetic. Use a pint of water and syphon it out, retaining this washing for chemical examination, as it may be desired later. If it is known what amount of opium or morphine has been taken, prepare a solution of permanganate of potash, one grain for each grain

of morphine, dissolve it in a pint of water and introduce it into the stomach, let it remain for one-half hour and syphon it out, and repeat this every half-hour until the solution returned is of the same color as when introduced. Permanganate of potash solution is decomposed and becomes colorless through the action of morphine. This treatment should be continued at intervals of half an hour until the recovery is complete. Hypodermic injections of one per cent solution of permanganate of potash should also be freely given, the total amount being equal to the amount of morphine taken.

The danger in opium poisoning lies in paralysis of the lungs, not from coma. Every effort should be made by walking the patient about and using flagellation. Such means cause deep and more frequent respiration and better excretory action.

Give hypodermic injections of strychnine gr. 1-20 or 1-10, every hour to keep up respiratory stimulation. Atropine gr. 1-100 should also be hypodermically given until the respiration and pupils respond. When the lungs and the pupils respond, it is not necessary to give strychnine or atropine so frequently, or in such large doses, for these medicines have then done all they can possibly do. The object in giving atropine is not to overcome coma, or to awaken the patient, for if this should be attempted by large and frequently-repeated doses, only deeper sleep would result.

Plenty of hot coffee should be administered either by stomach or per rectum. If respiratory

action continues to fail in spite of all treatment, artificial respiration must be practised for hours if the heart continues to beat, until the respiratory act is reëstablished. As long as the heart continues its action, there is hope of saving the patient. This applies to all cases of asphyxia or to respiratory failure. A physician cannot possibly justify himself in giving up a patient as long as there is the faintest heart's action. Five and six hours of artificial respiration have finally succeeded in restoring life after all respiratory action had voluntarily ceased, but the heart's action still continued.

It is sometimes impossible to detect cardiac pulsation. Nitrate of amyl if inhaled will cause this to become apparent, if it exists at all. Then artificial respiration may be the means of restoring life. It may be worth while trying, even in aparently hopeless cases.

CHAPTER XXXII.

NUCLEIN.

PREPARATIONS.

Nuclein Solution—Nuclein Tablets—containing two drops of the solution or one-half drop; nuclein tablets, for hypodermic use, containing eight drops.

Dose—See text.

Nuclein is the therapeutical basis of all animal extracts. There is a nuclein peculiar to each gland. Nuclein, as its name would imply, has its origin in the nuclei of cells and, when extracts are formed from any of the cellular organs, the nuclei of the cells contribute the greater part of the medicinal property of that extract.

The various extracts or antitoxins have each distinct or almost specific medicinal properties which others do not possess. One cannot wholly be substituted for the other. The origin of each determines the use to which it can be applied.

Each extract or antitoxin has been used in the treatment of many diseases apart from those for which it is almost specifically intended. Diphtheria antitoxin is antidotal for diphtheria. Antistreptococcic serum for diseases in which streptococci take a part.

Tetanus antitoxin for tetanus.

Antitoxin thyroid, or antitoxin adrenals, or their extracts, for diseases of those glands from which the serum or extract is made.

They all produce decided physiological reaction. An overdose is likely to prove serious. The utmost care must be exercised in their administration, which should be left entirely to the physician. So many serious results and deaths have followed their promiscuous use by the laity, that many authorities recommend that laws be passed restricting their sale and use only to physicians.

With nuclein solution or tablets (W-A) it is altogether different. This remedy is comparatively harmless. No reaction occurs and no harm results from overdosing. It is not a poison.

Usually all medicinal substances that possess marked curative properties, also possess poisonous ones, or, at least, can produce profound physiological effects when given in excessive doses. The virtue of their therapeutical action depends upon the physiological stimulating effect produced in medicinal doses, which stimulation, if greatly increased, and pushed beyond the extreme limit of physiological stimulation, becomes an irritating or paralyzing poison. The difference between the useful medicinal effect, and the poisonous one is a mere matter of quantity.

It might appear, that because nuclein is not poisonous like other animal extracts, or, like serums, that it lacks potency. This, however, is not a fact. Clinical demonstrations go to show that nuclein is an excellent curative agent, and can be successfully used in a greater variety of diseases than any single animal extract, serum or

antitoxin and it may even be used as a substitute for some of them.

The reason for this is, that it is not derived from any particular gland, as from the thyroid or adrenals. It is not made from any particular pathogenic germ, as tuberculin from tubercle bacilli; anti-streptococcic serum from streptococci; or diphtheria antitoxin from Kleb's-Loeffler baccilli.

Nuclein is the actual vital principal of cell life. It is found alike in animal and vegetable cells. It is a complex, nitrogenous body, containing a large amount of phosphorus in the form of nucleinic acid. When taken into the organism it stimulates rapid proliferation of the multi-nuclear, white blood corpuscles. The nuclei of cells in various glands possess certain specific properties, while the nuclei of leucocytes possess more general properties. Hence the greater and wider application of nuclein over extracts of special glands.

While nuclein stimulates production of leucocytes, which latter destroys germs and neutralizes toxic substances, it of itself also possesses germicidal properties.

The nuclein of commerce is chiefly formed of yeast, but it can be formed from milk or yolk of eggs, or from any animal substances containing cells. As nuclein very rapidly increases the number of white corpuscles in the blood, it thus produces artificial leucocytosis.

Normally, leucocytosis is produced after each meal.

During digestion there are many products

formed which are not always wholesome. Frequently tainted meat, or milk, or cream in which toxins have formed, or vegetables that have decayed are eaten. Even the digestive fluids do not always render such foods aseptic. This is shown in diarrhea and colic and in the fermentative and foul-smelling stools. If such products of indigestion are absorbed, auto-infection results, which is manifested by mental depression and a general tired feeling; or if severe, by headache and fever. Evidently the physiological leucocytosis is not always sufficient to neutralize or destroy the ptomaines as they enter the blood. Toxic substances are constantly being formed in all structures, which would be injurious, were it not for the fact that fixed cells, as in the various glands, and the floating leucocytes produce secretions which change these toxins and facilitate their exit from the body. To understand this it is only necessary to mention the evil results that follow when the functions of the thyroid and suprarenal glands are destroyed.

Leucocytosis is natural in many inflammatory diseases. Nature here endeavors to prevent disease by increasing the number of white blood corpuscles, the function of which is to destroy germs as well as toxic substances. Upon the ability of each organism to rapidly and sufficiently increase the number of leucocytes, depends the power of the individual to resist many diseases.

The physician of today should be fully aware of the importance and of his ability to produce artificial leucocytosis at will, and should realize the great assistance he can render his patient

by prescribing nuclein, the active, vital principal of cell life.

This wonderful ability should be the common property of all physicians and it would be, if they could realize the cell-creative power of nuclein. It is not necessary to take anybody's word for it; take a microscope and count the white blood-cells before and after taking nuclein. Note the rapid improvement within a few hours when administered in severe diphtheria or after a few days in phthisis or in chlorosis.

There is evidently a nerve center which regulates the production of white blood corpuscles just as much as one which regulates the quantity of sugar or of carbonic acid in the blood. When this center is stimulated either by inflammatory products or by the administration of nuclein, there is thrown into the blood an increased number of leucocytes.

There may also be reflex irritation. The feeling of well being which follows immediately after eating, even before much food can be absorbed from the stomach, is evidently produced by the presence of food in the stomach which reflexly causes an increase in the number of leucocytes.

Leucocytes may be looked upon as scavengers of the blood which are constantly on the alert to destroy pathogenic germs and render poisonous substances harmless. We probably do not fully realize our own ability to rally to our assistance so powerful an ally, to fight so relentless, so deadly an enemy to human life, as bacteria.

While nuclein is indicated in those conditions

which require an increase in the number of white blood corpuscles, it would be well at this point to study this cell and its functions more carefully.

A white blood corpuscle, or leucocyte, is a living cell containing several nuclei. This cell circulates in the blood and has all the properties and functions of cells found fixed in glands in other parts of the body. A leucocyte has the power of extracting from the surrounding blood such constituents as it needs for its growth and for its secretions. In doing so the leucocyte must necessarily increase in size and when it is ready to discharge its contents, the protoplasm simply contracts and expels it. This cell product passes into the blood and is as true a secretion as that produced by the cells of the liver, pancreas, or other glands. This secretion is probably a nuclein.

To prove that leucocytes are also phagocytes, the microscope is used and germs can be seen in their interior in various stages of destruction. As long as germs do not crowd into the blood too rapidly, the leucocytes will keep the blood free enough from germs to prevent disease. In contagion, however, bacteria accumulate so rapidly and in such large numbers that the leucocytes cannot handle them and the consequence is that germs become the controlling element in the blood, producing their own secretions, which together with their presence, causes such symptoms as belong to infectious and contageous diseases. Under these circumstances, the necessity of giving something that will greatly increase the number of leucocytes, and even stimulate them to greater activity, is apparent. In

typhoid fever, diphtheria, scarlet fever, measles, septicemia, phthisis, or in similar diseases, leucocytosis must be produced. The earlier in the disease that this can be brought about the better, as the number of germs are not so great in the beginning, and, the prospects of aborting disease are much brighter than later on when the blood is simply swarming with bacteria.

In tuberculosis this remedy has frequently reduced fever and kept it down and has thus been the means of curing some patients. If it does not cure in all cases, it certainly makes the patient more comfortable, by lessening the cough and also the fever. In this disease, it is best given in large doses, ten or twenty drops hypodermically once a day. If this has no effect upon the fever, after a few days' trial, increase the dose five drops each day until there is some change in this symptom, until forty or even fifty drops are given.

Tonsillitis has frequently been aborted by giving five or ten drop doses hypodermically every four hours for three or four doses, or by taking internally three or four tablets every hour for six or eight doses.

In pneumonia it has very many enthusiastic advocates. At the very beginning of the disease it produces a much better effect than later. The dose here is ten to twenty drops hypodermically, or, by the mouth every four to six hours.

In cancer, it has certainly been of great benefit. If not effecting a complete cure, it at least causes a favorable change in some of the symp-

toms by preventing excessive secretion as well as overcoming the disagreeable odor.

In all conditions of septicemia, no matter what the source, nuclein should be hypodermically given in five or ten drop doses, every four to six hours. Of course, the source of septic infection must be sought for and the cause removed as far as possible. In cases of abortion, it would be folly to treat the septic symptoms while there are still retained in the uterus decomposing products of conception.

Diphtheria is a disease which has been successfully treated by injections of antitoxin. There are many cases recorded which show that the hypodermic use of nuclein in ten or twenty drop doses, or even more, has produced as marvellously rapid results as those produced by antitoxin. Upon the first suspicion of the presence of this disease, nuclein tablets or the solution may be administered very freely. Other treatment, of course, must not be neglected, such as calomel, given to purgation, local applications of hydrogen dioxide, internal administration of calcium sulphide or iodized calcium and strychnine. If the administration of nuclein is beneficial, it will show good results within from twelve to twenty-four hours by a decided reduction in the fever or disintegration of the membranes. It is not then necessary to continue the use of nuclein unless there should be another rise of fever or a reappearance of the membrane. If anemia should show itself, it would then be necessary to give nuclein tablets every two or three hours.

Nuclein can also be applied locally in the form of a powder to stimulate indolent, diphtheritic or cancerous ulcerations, while the remedy may be given internally at the same time.

Nuclein not only increases the white blood corpuscles, but also the red ones. This can be very easily demonstrated by giving two to four tablets (which contain two drops of nuclein solution) four to six times a day to chlorotic girls. It is of the utmost value here, even when iron and arsenic have failed. The first effect noticed is not always the return of the natural color to the lips and mucous membranes, but the rapidly beating heart becomes slower and palpitations improve, the tired and worn-out feeling disappears, and the general health is decidedly better before the lips assume their normally red color. These improvements show conclusively that the red blood-corpuscles must have increased in number. The white ones also have increased but not so rapidly as to break the normal proportion between the two.

In giving nuclein it has been the rule with the writer to give it, whenever possible, alone without combining it with anything else. When many remedies are given at the same time, it is difficult to say which particular one has the right to claim the cure of the case.

For instance, in cases of tonsillitis, if calomel and saline cathartic and aconitine are given with nuclein, it is simply impossible to tell of what value the nuclein is, as tonsillitis can be very frequently aborted by the first three remedies.

In the treatment of all diseases, except those

in which serious results may follow in the course of two or three days, nuclein, or any remedy supposed to be of value in the case, should be given alone. In serious diseases, where fatal results are likely to follow quickly, it is not wise to experiment with a remedy that is not absolutely certain to produce results, and here is where combinations come in; it makes no difference to the physician or the patient, which single remedy produces results, just so the combination effects a cure.

The writer is an advocate, and a strong one, of giving remedies by themselves and does so in all cases whenever it is possible. This is the only correct way to study therapeutics properly—to learn the exact value of each remedy. We cannot afford to do this, however, in serious cases, and, here we must depend upon the skill acquired in prescribing and make combinations of remedies whose actions are similar, so that each one may help the other in producing the desired results. This of course only applies to such remedies as are not thoroughly understood. One sure of the action of a drug it should be given alone, confidently and "to effect."

In the general run of all contagious diseases, nuclein should be part of the treatment. If it does not seem desirable to prescribe it alone, it may be given in conjunction with other remedies.

SUPRARENAL EXTRACT.

Many glands produce secretions which, if retained in the economy, produce serious symptoms and even death. If the secretion of the urine

should be suppressed for three or four days, uremic convulsions and death are most likely to follow. If the bile is not expelled, there also follows serious symptoms which may also result in death.

It seems strange that there should be produced in the body substances which are so extremely poisonous that death can be produced if they are retained, or, if they are injected into other animals.

Every gland produces a secretion and retains it within its cells until needed. This is very easily demonstrated microscopically by the appearance of granules in these cells, and, besides this, the cell actually increases in size. The cell is made up of protoplasm and contains a nucleus. When this cell has excreted, there are no granules in it and the cell becomes smaller. This cell then selects material from the blood out of which to make its individual secretion, and in doing so, it takes into its own self, materials out of which the secretions are made, converts them into granules, so that the cell itself is not only enlarged, but granular. In some instances, if it is a fluid that is created, the cell will fill itself with this fluid and become enlarged. When the time comes for this secretion to be used, more blood passes through the gland than usual, dissolves the granules present in the cells and washes out the secretion. What one cell does, so do all the millions of cells that combine to form any particular gland. In a sense, each cell, is by itself, a miniature gland.

The glands which are known as ductless

glands, such as the suprarenal capsule, thyroid, thymus, spleen and the pituitary gland, form a secretion which is thrown directly into the blood, there to be utilized for various purposes. These purposes can be determined only in two ways, first by disease of these glands, and secondly, by their extirpation.

In disease of the suprarenal capsules, when their function is completely interfered with, we find an array of symptoms that are very characteristic. These are bronzing of the skin, vomiting, diarrhea, rapid pulsation, extreme exhaustion, great muscular prostration and anemia. There are also conditions resembling paralysis; hallucinations, and later convulsions. All of these symptoms are produced by something being retained in the blood. This something may be, and probably is, the product of muscular waste, something that is produced in the katabolic changes that are constantly going on.

It is evidently the function of the suprarenal capsule, among others that it may have, to destroy the hemoglobin which is set free when the worn-out red corpuscles are broken down and dissolved, as they are supposed to be, in the spleen. In disease of these capsules possibly normal red blood corpuscles may also be destroyed, which produces anemia.

In Addison's disease, when the adrenals can no longer destroy hemoglobin, nature possibly tries to get rid of it by depositing it in the deeper layers of the skin, which, to a certain extent, rids the blood of its presence, as it is outside of the circulation. While this bronzing is not

always present, this may be accounted for by some part of the capsule still being capable of functionating as far as the hemoglobin is concerned.

In Addison's disease, the suprarenal glands can no longer supply that something which neutralizes or assists in the rapid elimination of poisons, which poisons, if retained, produce those grave conditions which lead to death. Here an effort, is therapeutically made, to offer a substitute by giving the patient extracts from the suprarenal capsules of sheep, or feeding them upon the capsule itself. It has been learned that gastric digestion does not interfere with the therapeutic property of the capsule and it can be given by the stomach just as well as by hypodermic means.

There are some cases on record where the disease has been held in abeyance, but results are not always uniform. It is nevertheless a remedy that should be tried in all cases, particularly at the beginning for, in the vast majority of them, it certainly produces amelioration of the symptoms. It will stop vomiting, diarrhea, rapid pulsation, and in other instances check the nervous symptoms, and the patient gains in weight and strength, and the discoloration sometimes disappears. These results have certainly been better than can be produced by other means, and the probabilities are, that if different preparations are used, this remedy may yet prove curative, in many of these almost, necessarily fatal cases.

Dose of suprarenal capsule. It has been shown that this substance is a powerful poison

and, if carelessly handled hypodermically, death may result. Twenty to forty grains of the fresh gland may be administered daily.

Glycerine or diluted alcoholic extracts of one young calf, or sheep gland, may be used daily. Tablets of the dried extract in doses of four to six grains may be used daily, beginning with three grains daily and gradually increasing. The pulse should be watched to guide the dose. It stimulates the heart's action and raises blood pressure.

A solution dropped upon an inflamed conjunctiva causes disappearance of the redness and pain, showing its property to contract blood vessels and thus produces pallor. It is a vasomotor constrictor and its application along this line can be readily made. Its local effects do not last beyond half an hour, but frequent repetition of drop doses, locally applied, may eventually relieve the inflammation. When cocaine is applied to an inflamed conjunctiva, it frequently fails to produce local anesthesia, simply because of the dilated blood vessel. Solution of adrenals, will, within one minute, relieve this congestion, which permits cocaine action.

THYROID EXTRACT.

The thyroid gland is one that has been carefully studied and, under the influence of an extract prepared from it, there is loss of body weight with increase of temperature, increase of appetite, which latter follows as the direct cause of the loss in weight; increased excretion of uric

acid and nitrogen compounds generally, and phosphoric acid.

It is found upon chemical examination, that the principal constituent of the thyroid gland is thyro-iodine and that the curative properties of this gland, as well as of the thymus, depends greatly, if not entirely, upon the presence of this.

In experiments made upon dogs, when the thyroid gland was extirpated, tetanus appeared. This was entirely prevented by giving hypodermic injections of the thyroid extract. The injections of other animal extracts were of no effect toward relieving or preventing the tetanus.

It would seem that each gland contains a principle peculiar to itself which can be used for the cure of disease of that gland, or, glands that have similar functions.

The principal application of thyroid extract then would be in the treatment of goitre, and, it has been found to be uniformly successful in reducing the tumor, and also the accompanying symptoms. Either a glycerine extract can be given, or preferably a gland itself can be eaten; one-half of a sheep's gland a week, or the powdered extract can be taken in tablet form in grain doses three times a day.

The gland of young sheep is the only one that should be used, as it has been found that in old sheep the gland has undergone disease and there is danger in its use. There are dangers accompanying the use of thyroid preparations, and the pulse must always be closely watched as it has a tendency to become very weak and rapid; there

is shortness of breath, with oppression about the heart, vertigo and coma. With many subjects, headache is produced as one of the first signs of an overdose, and the patient should always be warned, that if headache or dizziness is produced, the dose must be diminished. There may also be a feeling of lassitude, and sometimes diarrhea and great thirst, and in severe forms, delirium and convulsions.

There are some patients who cannot take thyroid extracts under any circumstances without producing distressing symptoms, as shortness of breath and constriction of the chest and vertigo. The dose should be diminished until a proper one is found.

Thyroid gland has given particular satisfaction in the treatment of cretinism, or even in children who are backward in growth—no matter what the cause of the arrest of growth may have been. In these latter cases, after prolonged treatment of one to six months, the children begin to grow and take on flesh, and the mind becomes brighter. In those cases of cretinism where the children are unable to walk or talk, where the intellect is extremely limited, or where they are positively idiotic, the results, as a rule, are very marked and favorable. The treatment in these cases should be kept up for at least six months, and possibly longer. Sometimes marked improvement occurs within two months.

The extract may be given, or the gland itself may be used. After a few months of treatment, these unfortunate creatures are able to walk and talk, their minds become clear and bright, and

they pass from an idiotic state to that of intelligent beings, and some of them grow from one to six inches in the course of five or six months of treatment. This report is certainly favorable enough to induce all physicians to use thyroid extract in all children of backward growth, and particularly in Cretins.

In exophthalmic goitre, reports are not so favorable, while in the treatment of simple goitre, about two-thirds of the cases are benefited and many of them completely cured.

Thyroid extract has also been used for the cure of skin diseases. The only one in which it is particularly beneficial is in psoriasis.

Its use in the treatment of insanity has been followed with considerable success, particularly in mental disorders connected with the menopause and also in melancholia. It should not be used in any of these cases where there is rapid loss of weight to start with. The probabilities are that, in nearly all cases in which the thyroid extract is beneficial, there is some deranged function of the thyroid gland itself.

Thyroid extract seems to be also particularly valuable in acromegaly. The dried extract, six to ten grains daily, or one-half of a fresh gland given each week in these cases, and if the disease itself is not entirely cured, many of the symptoms are frequently improved.

Myxedema is a disease that is attended by atrophy of the thyroid gland. Thyroid gland, or its extract, as a rule, produces excellent results and many complete cures. Fifteen to twenty grains of the fresh gland daily is the dose.

The precautions necessary are to watch its effects closely in cardiac disorders, as fatal syncope has been produced in a number of cases. The patient should be in bed and small doses given at the beginning, either of the tablets or of the gland. The remedy is a dangerous one in the hands of any but a physician, and even he must use the same cautiously.

OBESITY.

As thyroid extract reduces weight, it was soon prescribed in obesity and with marked results. It proved more beneficial in the obese who were pale and flabby, with weak pulse, with tendencies to œdema, or in what might be called, asthenic obesity.

In sthenic obesity, with the freshness of youthful vigor, where the pulse is full and bounding and where the subjects are good livers, thyroid extract is not very satisfactory.

Precautions must be used where the heart's action is weak, particularly at the beginning; give minimum doses for a week, gradually increase until slight flushing of the face is felt or fullness in the head. Reduce the dose and keep just below this point and keep the patient in bed.

TETANY.

When tonic spasms occur in the hands, fingers and wrists of rickety children, thyroid gland gives great relief and will also cure. Four grains of the thyroid tablets, or better still, one-half of a fresh thyroid gland each day, chopped fine and slightly boiled soon produres improvement.

UTERINE DISEASES.

As the thyroid gland becomes frequently enlarged at puberty, and during pregnancy, its application might prove useful, as it is certainly indicated and it should be given a trial.

THYMUS EXTRACT.

With regard to the extract of the thymus gland, we find that it acts similarly to the extract of thyroid, but is evidently much weaker. The dose of the thymus gland is about 2½ drams to the ounce, given three to five times a week. It certainly has better effects in cases of exophthalmic goitre than thyroid gland, as there is a general improvement in at least half of the cases, and particularly is it useful in reducing the pulse rate.

OVARIAN EXTRACT.

When the ovaries are extirpated, or when they cease to functionate, there are likely to arise many abnormal conditions, particularly vasomotor, which cannot exactly be classed as disease, but they are grouped under one head and denominated as "change of life," or menopause.

These sensations, or symptoms, are many, as excessive flow, amenorrhea, pelvic and lumbar pains, urinary symptoms, hot flashes, headache and vertigo, or fullness of the head, mental depression, insomnia, nervousness, flatulence, anorexia and anemia.

When ovarian substance is given during natu ral or induced menopause, patients, as a rule, begin to improve rapidly, and the various symptoms complained of disappear. There are many

annoying conditions at this time of woman's life that resist all ordinary treatment. Ovarian substance should be tried, and is best given in the form of dessicated ovaries of young cows, in doses of one-half grain three times a day. Four grains of the compressed tabloids may be given three times a day. Treatment should be continued for two or three months.

There does not seem to be the same danger attached to ovarian extract as to that of the suprarenal or thyroid glands.

SPLENIC EXTRACT.

This organ is one of the sources of leucocytes and is also supposed to break down the worn-out red blood corpuscles and must necessarily contain the products of this disintegration. It should possess restorative qualities, when administered in blood diseases, as anemia, chlorosis, leukemia, and generally, good results quickly follow its administration. Probably not more so than when W-A nuclein solution or tablets are used, and like nuclein, splenic extract produces changes and improvements first in appetite, heart and nervous symptoms, before pallor begins to disappear.

Splenic extract frequently produces gastric pains and indigestion. "Eurythrol," a watery extract, salty as beef extracts, is free from the above objectionable features and can be given daily in teaspoonful doses.

ORCHITIC AND BRAIN EXTRACTS.

Orchitic and brain extracts have not yet established their reputation as curative agents of much

value. Reports are too contradictory. They may yet find their place.

There is likely something stimulating about testicular extract, but the probabilities are that suggestion is the chief active agent.

ANTISTREPTOCOCCIC SERUM.

This serum is used successfully where streptococci are present in disease. When they are found in the sputum of tuberculosis, the hypodermic injection of two and one-half drams once or twice usually causes the disappearance of streptococci.

In scarlet fever, a few cases are reported in which the injection of this serum rapidly reduced fever. This disease ought to be one particularly suitable for this treatment.

In erysipelas, this serum has also a favorable record to show, in reducing the mortality and also in the amelioration of symptoms. This serum is non-toxic and may be used in the newborn. In adults two to six drams are given at a dose,

TUBERCULIN.

This serum has given very little satisfaction in the treatment of tuberculosis of the lungs. Its chief application is in lupus vulgaris, where some cures are reported.

In this disease, thyroid preparations have done as well as tuberculin. Better effects are obtained in tuberculosis by the administration of nuclein.

CHAPTER XXXIII.

PILOCARPINE (ALK.)

Standard granule—Nitrate, gr. 1-67, gm. .001.

Dose—Two to six granules every one or two hours. For immediate and prompt use—from 1-2 gr.—1-8 gr. is used in urgent cases. Gr. 1-10 hypodermically for cases not urgent.

Jaborandi contains two alkaloids, pilocarpine and jaborine. While both these principles are obtained from the leaflets of jaborandi, they are, therapeutically, as antagonistic as it is possible for two medicines to be.

When jaborandi is administered to a patient, it usually produces copious sweating and salivation. In case it fails to produce these results, the preparation used must have contained an unusual amount of jaborine, which has an action similar to that of atropine and, therefore, antagonizes pilocarpine. In order to reduce the number of such failures to a minimum, the various preparations of jaborandi should be replaced by the alkaloid, pilocarpine.

When pilocarpine is injected subcutaneously, there is usually produced, within five minutes, vertigo and flushing of the face, neck and breast, which is followed by paleness. Drops of sweat make their appearance, first around the seat of injection, then upon the forehead, and gradually over the entire body. Saliva flows in a constant

stream from the mouth, tears run down the cheeks and the secretions of the entire respiratory and alimentary tracts, and particularly of the pancreas, are augmented; the pupils are contracted; the heart and lungs perform their functions more rapidly; the pulsations sometimes increase from twenty to fifty beats. This latter lasts about two and a half hours. The blood-pressure is lowered and the temperature falls from one-half to two degrees and remains so for about four hours. The general effects of pilocarpine last about four hours, and as much as two pints of saliva may be secreted and more than twice this amount of perspiration.

Naturally, after a copious sweat and a loss of other secretions, with depression of the heart's action and fall of body-temperature, there must follow chilliness, fatigue, drowsiness, great weakness and depression. These facts should always be prominent in the mind of the physician, when administering pilocarpine to weak and delicate patients. Depressing effects may be prevented by 1-20 grain strychnia every two hours.

If pilocarpine fails to act upon the skin and salivary glands, it may act with unusual vigor either upon the kidneys, the stomach, the intestines or the lungs. If this is the case, large quantities of urine may be excreted; thick ropy mucus may be vomited; profuse diarrhea may be produced or frothy mucus may be continually expectorated.

From the effect of pilocarpine upon the lungs, serious results may be anticipated, especially

when they have undergone marked pathological changes. Bronchial mucus is formed in such large quantities as to greatly embarrass the weakened lungs in their effort to expel it; sometimes they are unable to do so and death ensues. This remedy is contra-indicated, therefore, where the lungs are weak or diseased, also where the pulse is rapid or feeble and the heart has lost its vigor and tone, and finally in gastro-intestinal irritation and inflammation.

By its action upon the glandular system, pilocarpine proves itself to be a very active evacuant. Under favorable circumstances, it can eliminate from the body from two to six pints of fluid. It may be used, therefore, in all cases of dropsy, as anasarca, hydro-thorax, hydropericardium, and ascites. In hydrothorax the effusion can be more quickly and easily removed by thoracentesis. When disease of the kidneys is the cause of the dropsical effusion and where the heart is strong, a reduction of the effused fluid is rapidly produced by the administration of pilocarpine, 1-10 gr. hypodermically being the dose.

To see a patient fully under the influence of pilocarpine, is to see an extremely uncomfortable and wretched individual. The eyes are red and tears are streaming down the cheeks; a thin mucus is dripping constantly from the nose; saliva is running in a steady stream from the mouth; perspiration is oozing from every pore and the body is soaking wet, shivering and cold. In addition to these effects there may be vertigo, vomiting, diarrhea, polyuria and constant cough-

ing in order to clear the lungs of increased bronchial secretion.

In erysipelas DaCosta considers gr. 1-6 of pilocarpine every 3 hours until diaphoresis is produced, a specific. Repeat the dose every 6 hours. It should not be given in debilitated cases, unless 1-20 gr. strychnine is administered with each dose.

For what purpose must a patient undergo this ordeal? Simply, that several pints of fluid may be removed from the system. In uremic poisoning, especially in puerperal eclampsia, where life is in great danger, relief must be obtained as quickly as possible. In such cases pilocarpine administered hypodermically in doses of one-half grain, by reducing œdema of the brain and by removing urea from the blood, may be the means of saving life. When there are five hours at least, during which the patient's life is in no danger, a hydragogue cathartic, as elaterium, or our good, old calomel and jalap, will do the same. The reduction of the dropsical effusion is just as certain and just as rapid as when pilocarpine is used; there is not much depression and very little, or no harm can result to the patient; and, certainly, he is much more comfortable during the action of a cathartic than during that of pilocarpine.

Precaution is necessary when prescribing this remedy for women during pregnancy, because of its tendency to induce labor-pains. In this one respect it has an action similar to that of ergotin, but is more powerful. When given during labor,

it increases the strength and duration of uterine contractions.

Pilocarpine augments the secretions of the nasal, pharyngeal and laryngeal mucous membranes, and, on this account, it is recommended by Guttman as a remedy to be used in treating diphtheria with the hope, that the membrane may be more easily detached. As is usual with favorite remedies, some physicians report that they save the lives of all of their diphtheritic patients, while others, equally capable, have lost every case.

In diphtheria, when the lungs are involved and the pulse is rapid, feeble and easily obliterated, so depressing a medicine as pilocarpine must necessarily act with great detriment to the patient. In this feeble state the remedies indicated are caffeine and strychnine. When the membrane is in the fauces or in the larynx, and the patient is fairly strong, pilocarpine, given every hour in doses large enough to stimulate free secretion, frequently produces expulsion of the membrane, but strychnine should always be given.

In order to produce free laryngeal and pharyngeal secretion, it is not necessary to give large doses. For a child of one year, three to six granules, gr. 1-67, should be dissolved in twenty-four teaspoonfuls of water and one teaspoonful given every half-hour or every hour. Three granules may be added to the prescription for each year of the patient's age, when free secretion is produced give the remedy less frequently.

Children are not as susceptible to the action

of pilocarpine as are adults. As this remedy increases the glandular secretions, it may be used to advantage in cases of suppression of milk, or even where the secretion is scanty. Four granules given every three hours will frequently restore the flow of milk, or, in cases where the supply is insufficient, the quantity will be augmented. In these cases, in conjunction with the administration of pilocarpine, the patient should be given the best nitrogenous diet possible, as meat, milk and eggs.

Pilocarpine frequently produces irritation of the gastro-intestinal canal and causes vomiting and diarrhea. When this occurs the medicine should be withdrawn. If this remedy is given early in the course of an attack of mumps, the disease may be aborted. It depletes the parotid glands by increasing the flow of saliva from them and this reduces the inflammation. Pilocarpine may be used as a substitute for eserine in diseases of the eye, since it, when locally applied, produces contraction of the pupil.

The most marked antagonism exists between pilocarpine and atropine. Pilocarpine contracts the pupils, increases all of the glandular secretions, produces primary flushing of the face and secondary pallor. Atropine dilates the pupils, checks glandular secretions, produces primary pallor and secondary flushing of the face. Each of these alkaloids may be used as an antidote to overcome the evil effects of the other. Atropine should always be given in those cases where pilocarpine has caused such an excessive secretion of bronchial mucus as to dangerously em-

barrass the action of the lungs. Incidentally, it has been observed that bald-headed patients, who were undergoing a course of treatment with pilocarpine, have had their growth of hair restored.

It has, therefore, been utilized, either by internal administration or by external application to the scalp, to stimulate the growth of hair and to restore gray hair to its natural color.

The following prescriptions are suggestions:

℞ Fluid ext. jaborandi.....oz. 1
Tinct. cantharidis .....oz. ½
Linimentum saponis .....oz. 1½
M. Apply night and morning.—Bartholow.

℞ Fluid ext. jaborandi .....dr. 1
Tinct. capsici .....oz. 1
Tinct. cantharidis .....dr. ½
Castor oil .....dr. 1
Alcohol, q. s. ft.....oz. 4
M. Sig. Apply (night and morning)—Hare.

From the preceding it will be seen that pilocarpine is an efficient diaphoretic, sialogogue, expectorant, galactogogue, mydriatic and hair-restorer. The diseases for which pilocarpine may be prescribed are uremic poisoning, hydrothorax and dropsies of all kinds not having their origin in the heart; mumps, diphtheria and other inflammations of the throat, larynx and bronchi.

CHAPTER XXXIV.

PODOPHYLLIN (RES.)

Standard granule—Gr. 1-6, gm. .01.
Dose—Two or three, three times a day, or six at once to produce quick results.

Podophyllin is a resin obtained from the rhizoma and roots of podophyllum peltatum, or May apple, and is prepared in granules containing 1-6 grain. When three to six granules are taken, there is usually produced within six hours, a copious, thin stool, preceded very probably by griping and nausea. To prevent griping, one or two hyoscyamine granules may be added to each dose of podophyllin. This remedy is one of the best cholagogues we possess and is therefore indicated whenever it is desirable to stimulate the function of the liver and to increase the quantity of bile.

It is of particular value in catarrhal inflammation of the biliary ducts, congestion of the portal circulation, or whenever the stools show by their clayey or putty-like color that there is no bile eliminated. This would not apply to occlusion of the bile duct by gall-stones. Podophyllin increases the intestinal secretion which accounts for the watery stools. It is often used by some physicians to cure chronic constipation by giving one or two granules before each meal, but we have in Waugh's Anticonstipation Granules a much better remedy.

CHAPTER XXXV.

QUASSIN (GLU.)

Standard granule—Gr. 1-67, gm. .001.
Dose—One to three before meals.

Quassin is the bitter principle of quassia, and is prepared in granules as above. Quassin is, undoubtedly the best bitter, stomachic tonic and promoter of the appetite that we possess. It acts by stimulating the gastric glands to increased activity, and is thus, indirectly, a digestant. Quassin is an excellent remedy to be used in all cases of indigestion where nausea, eructation or epigastric pain exists, as a result of fermentation in consequence of a poor quality of gastric juice.

In convalescence, few remedies are better suited to restore loss of appetite. In chronic dyspepsia, especially of drunkards, where large quantities of mucus are vomited, two or three granules each of quassin and emetine, given before meals, frequently effect a cure.

Migraine, consequent upon a feeble digestion, often yields to a course of quassin. If an acid is indicated, two or three granules of phosphoric acid may be given in conjunction therewith, or recourse may be had to hydrochloric or nitro-hydrochloric acids, either of which are great aids to digestion under certain conditions.

Quassin stimulates the salivary, mucous, gastric and intestinal glands and also increases

peristalsis in the intestine. It is also used as an anthelmintic and parasiticide. The dosage varies considerably. As a simple tonic or in debility of the stomach or intestinal structures with inactivity of the secreting organs, 1-32 to 1-16 of a grain may be given, preferably before eating. In some patients the larger dose acts as an emetic but this condition is rarely met with and when it is the reduction of the dose for a few days will put a stop to the symptom.

In atonic dyspepsia quassin is one of our most useful remedies. If we find at the same time a dark, narrow, thin tongue; and a deep-red buccal mucosa, quassin, with the addition of an acid after meals, will promptly bring about a change for the better. In cases with broad, flabby tongue, with marked indentations upon the edges, coated with a heavy "fur" of a dirty white or brown, with the mucous membranes of the mouth pale, marked anorexia, and general feebleness, podophyllin or euonynim should be given in small, divided doses at night and from 1-67 to 3-67 of a grain of quassin before each meal.

In the "Digestive" tablet quassin is added for its general tonic effect and in mild cases of "dyspepsia" it may always well be given in conjunction with pepsin, papayotin or any other of the digestants, after meals. Quassin should be used more than it is.

CHAPTER XXXVI.

QUININE (ALK.)

Standard granules—Gr. 1-67, gm. .001; gr. 1-6. For dosage, see text.

Quinine is one of the alkaloids obtained in variable quantity, 2½ to 9 per cent, from the bark of various species of cinchona. In dosimetric medicine, the following granules are used; quinine arsenate, gr. 1-6 and 1-67; hydrobromate, gr. 1-6; hydroferrocyanate, gr. 1-6 and 1-67; picrate, gr. 1-6; salicylate, gr. 1-6; valerianate, gr. 1-6; sulphate, gr. 1-6.

When quinine is dosimetrically used, or when it is prescribed in doses of one or two grains, it is a bitter tonic, antiperiodic, antiseptic and a cardiac and cerebral stimulant. When quinine is used in larger dose, 20—60 grains, it is an antipyretic, oxytoxic, and a cardiac and cerebral depressant. It is also a poison to protoplasm, in as much as it checks the ameboid movement of white blood-corpuscles and prevents their passage through the walls of the capillaries.

Full medicinal doses of quinine—from five to twenty grains—produce hyperemia of the brain, which can be observed by ocular demonstration in the retina and in the tympanic membranes. Accompanying this congestion, there is tinnitus aurium, and a sensation of fullness in the head with some vertigo. Temporary blindness and deafness have been produced by large doses of

quinine. According to Binz, quinine is eliminated chiefly by the kidneys, but also by the salivary, sudoriferous and mammary glands. Usually within half an hour after a large dose has been taken, it makes its appearance in the urine and its elimination continues for two or more days.

Quinine does not occupy the prominent place in alkaloidal medication, that it does in the older methods. This has been shown by the publication of twelve prize lists of the twelve most useful medicines in dosimetry. These lists were prepared by different physicians residing in different parts of the United States and in only one of them was quinine mentioned. This is remarkable and to some extent, unfortunate.

As an antipyretic, quinine rightly occupies a minor place. There are other remedies, as aconitine, digitalin and veratrine, which reduce fever, "quickly, safely and agreeably." In the treatment of all kinds of fever, quinine may be given in conjunction with other medicines, because of its tonic effect. Burggræve has established the excellent rule of giving arsenate or hydroferrocyanate of quinine and arsenate of strychnine after fever has been reduced by other means. Besides its tonic effect, it also prevents relapses.

It is in the treatment and cure of malarial diseases, quinine produces its most important therapeutical effect. Its action in these cases is so perfect as to make it, not only the chief of remedies of its class, but, also, a specific. Arsenate of quinine is best suited for the treatment of chronic forms. This salt contains 74 per cent of quinine,

10.6 per cent of arsenic and 15.4 per cent of water. The arsenic contained in this preparation undoubtedly aids the quinine in neutralizing the malarial poison and, therefore, in effecting a cure. On account of the arsenic, the dose, necessarily, must be small. The arsenate does not derange the stomach, like the usual doses of other salts of quinine, and its contraindications are few.

In the treatment of remittent fever, first act thoroughly on the liver and intestines by means of calomel. Follow this by giving two granules of quinine arsenate every 3 hours, or four grains of quinine every 3 hours. To effect a cure it must be pushed until full physiological effects are produced; ringing in the ears, or fullness of the head. What is necessary is to obtain results, which can rarely be done until some physiological effects of the drug are manifest. Give the remedy in such doses and at such intervals as will most quickly produce them. As large doses of quinine produce renal congestion, its administration in malarial hematuria should be timed so as not to produce its full effects at the same period that the paroxysm is congesting the kidneys. It is claimed that quinine is hurtful in hematuria. In this form the kidneys bear the brunt of the congestion. This is sufficient without aiding this congestion still further by means of single large doses of quinine. If quinine seems necessary, give 4 grains every 2 hours. In this way cinchonism is gradually brought about and the kidneys are not suddenly congested by quinine.

In the treatment of intermittent fever, large doses of quinine are usually necessary. Give ten or fifteen grains five hours before the paroxysm and the same amount during the sweating period. By this method further attacks may be prevented and the disease entirely broken up in a few days. It may sometimes be necessary to increase the dose to 20 or to 40 grains if results do not follow. Best results follow after the bowels have been thoroughly moved by means of calomel, gr. 1-10—1-5 every hour for eight or ten doses, to be followed by a large dose of Saline Laxative. If the calomel produces its characteristic stool within a few hours, it is not necessary to continue it.

While intermittent fever can be cured by means of small doses of quinine, it takes a longer time to do so. Then there is not the effort made to abort the attack. Even after the attacks have ceased, give 5 to 10 grains of quinine five hours before the usual time of the appearance of the attack for several days. Follow this by quinine arsenate granules gr. 1-6, two every three hours for one or two weeks. As a prophylactic two granules of quinine arsenate gr. 1-6 three times a day, or 2—4 grains of quinine sulphate three times a day should be administered.

In the pernicious or congestive form of malarial poisoning, if the stomach is irritable, or if it is desirable to prevent its irritation, if coma exists, or if quick and sure action is required, quinine should be administered hypodermically as first proposed by Kelsch:

"Hydrochlorate of quinine.....gr. 45
Antipyrine .....gr. 30
Distilled water.....dr. 1½

"A test tube having first been rendered perfectly clean, boiling water is placed in it, and the ingredients added; these immediately dissolve, and the solution boiling hot is filtered through a sterile piece of muslin or a sterile paper. As soon as the liquid cools sufficiently, a hypodermic syringe is filled, and, the skin having been carefully disinfected, an injection is given.

"In cases of remittent malarial fever in which the stomach is in such a condition that quinine cannot be given, and the fever must be overcome, this treatment is useful, and also is of value in cases where malarial poisoning is so grave that active antimalarial influence must be brought to bear at once. Dose of the solution is 15 minims for adults and from 5 to 10 minims for children. Should the malarial fever take an algid form, 30 minims of ether are injected simultaneously.—Blum (*Jour. des Prat.*, March 21, 1896)."

Quinine is also used in the treatment of all kinds of neuralgia, but it is best adapted to those cases which manifest most periodicity. In simple neuralgia of anemic patients, the hydroferrocyanate may be used; in neuralgia of malarial patients, the arsenate is preferred; while in neuralgia of rheumatic patients, the salicylate is indicated.

When nervous disorders are of malarial origin, as chorea and asthma, hydrobromate or valerianate of quinine should be used. Quinine is

probably given more frequently, and is used in the treatment of a greater variety of diseases, than any other medicine. The habit of prescribing quinine has grown so strong with some practitioners that they have become "routinists." Fortunately, quinine can do no harm in small doses, but acts as a stomachic tonic, and increases the functions of the heart and brain; consequently, a course of quinine usually improves the condition of any patient. It is always an excellent remedy to give when there is no indication for the use of any particular medicine. As has been aptly said, "when you don't know what to give, give quinine."

In the treatment of disease, especially of a serious nature, medicine rarely cures unless it produces some physiological effect. This may not always be apparent but, nevertheless, it occurs. In the treatment of serious, malarial diseases, the writer believes it is necessary to push the quinine treatment until there are evidences of improvement or until fullness of the head or tinnitus aurium is produced. In the treatment of milder cases, prominent symptoms are often relieved before apparent physiological effects of the medicine have been produced.

When a remedy is indicated, we are justified in continuing its use until some effect upon the system is manifested, but we should not proceed beyond the first physiological manifestations.

We can, if it is necessary, keep the patient under the influence of the medicine to this extent. This can be accomplished, properly, only when medicines are dosimetrically used.

CHAPTER XXXVII.

SALINES.

MAGNESIUM SULPHATE.

The action of magnesium sulphate is almost too well known to need description. As Epsom salt, our grandfathers, and their fathers again, were well acquainted with its virtues. Found in sea-water, in mineral springs and as an efflorescence upon rocks and in caves it physically resembles oxalic acid and sulphate of zinc. Fatal accidents have occurred from this resemblance, the latter being taken by mistake. Magnesium sulphate is also manufactured in large quantities by acting with magnesium carbonate upon sulphuric acid. In its crude state it occurs in small colorless prisms or needle-shaped crystals. The taste is bitter, saline and somewhat acrid. It is efflorescent in air, soluble in water and insoluble in alcohol.

Death has resulted from too large doses but, as administered in medicine, it is one of the most effective, safe and certain of the "salines." From half an ounce to an ounce is the amount usually given but just as good results can be obtained—especially if the salt is given in a prepared effervescent form (Abbott's Saline Laxative is an excellent example) from much smaller doses. In this way, too, the irritant effects which often accompany large doses are avoided. A dram or

two given in half a pint of hot water will be as efficacious (often indeed more so) as half an ounce in cold water. As an aperient and antacid very small doses—from ten to thirty grains—every three hours will be of service.

The preparation of magnesium sulphate (Saline Laxative or Seidlitz Salt) which is used in Alkalometry is effervescent and acts much more pleasantly than the crude salt. It is—according to dose—antacid, aperient, refrigerant and cathartic. In doses of one heaping teaspoonful, taken upon awakening in the morning, it gives, within two to four hours, a free, painless evacuation. If it is desired to obtain more marked results twice the amount should be given. In many instances the smaller dose taken in a glass of very hot water will prove effective in even less time.

As secretion is stimulated by the salt it is evident that full doses will produce watery stools, thus flushing out the intestinal tract and rendering impaction impossible.

It is a most valuable agent in dropsy. In this condition a heaping teaspoonful should be given every four hours, the result being a speedy diminuition of the ascites. Renal secretion is increased considerably and if the skin is warm at the time of administration, copious elimination will follow through the sudoriparous glands.

If given upon an empty stomach—and Saline Laxative is usually so given in routine treatment—this salt acts quite as much upon the kidneys as upon the intestine. The single morning dose (given in hot water unless the refrigerant effect is desired) will act as a general cleanser of the

system and, if the night prior a few divided doses of calomel and podophyllin have been taken, the liver, kidneys and *tractus intestinalis* are one and all placed in proper condition to fulfill their functions.

In fevers, especially in the initial stages, Saline Laxative will be found of the greatest efficacy. In typhoid, pneumonia and similar protracted diseases one or two doses daily will serve to keep the bowels clean; and if, at the same time, the sulphocarbolates are exhibited in sufficient quantity (ten grains every two to four hours) the entire intestinal tract will be kept as nearly empty and aseptic as is possible.

In dysentery small doses will give quick relief; they seem to soothe the intestinal mucosa, neutralize acids and wash away waste. In diarrhea a single full dose will often practically cure the disorder but this should always be followed by an intestinal antiseptic and a mild tonic astringent.

From the foregoing it will be seen that the necessity for the use of Saline Laxative is constant. Its use simplifies treatment wonderfully but to attain the best results with this as with other remedies it must be given according to the conditions present.

In routine treatment and during prolonged alterative course it will be found best to give the single daily dose—in hot or cold water as circumstances may demand—and always the first thing upon waking in the morning. A full teaspoonful is nearly always sufficient but in strong adults or those who develop an "idiosyncrasy" two teaspoonfuls may be given. A small spoonful in

hot water will be suitable for the dyspeptic, debilitated and constipated patient. The same dose will serve for the pregnant woman. If this alone is not sufficient to give one free bowel movement daily one or more Waugh's Anticonstipation granules after each meal will be indicated.

In all hepatic "bilious" conditions Saline Laxative will be found as useful as sodium phosphate if not more so. In lead colic it is invaluable; small quantities of sulphuric acid may be added to the solution which should be given freely.

In the disorders of hot weather the effervescent salt may be given in cold water sweetened and flavored with lemon; in this form, as "lemonade," the youngest children will take it willingly.

In fact there is hardly a morbid condition which will not be benefited by the use of Saline Laxative, and its exhibition daily to the healthy will prevent the appearance of disease.

SALITHIA.

Salithia is magnesium sulphate with the addition of a lithium salt in effervescent combination with colchicine. Each dram of the salt holds gr. 1-67 of colchicine. The therapeutic action and uses of magnesium sulphate have been touched upon above. The utility of lithium in all gouty and rheumatic conditions is unquestioned, and when combined with colchicine it becomes almost specific.

The indications for Salithia are therefore apparent. The dosage is the same as that of Saline Laxative. In acute rheumatic conditions a teaspoonful may be given every three hours for the

first day or two and if pain is marked and the need of elimination urgent, as it usually is, one granule of colchicine and two of macrotin may be added to every dose. In latent gout, the rheumatic diathesis, uricacidemia, etc., a teaspoonful once or twice daily will keep down possible exacerbations and by stimulating the excretions of waste place the system in a better condition to respond to other treatment.

In mild forms of uricacidemia this will often be the only remedy needed, though a primary "cleaning out" with an active cathartic is desirable.

A few doses of podophyllin or leptandrin—gr. 1-6 half-hourly for four to six doses—will if combined with an equal amount of calomel, produce the next day two or three copious bilious dejections. If Salithia is now exhibited results will soon be apparent.

In severe cases the addition of lithium in any form or any other uric-acid eliminant or solvent is permissible, the additional medication being given at the same time as the Salithia.

CHAPTER XXXVIII.

SCILLITIN (GLU.)

Standard granule—Gr. 1-67, gm. .001.

Dose—Two or three granules every one or two hours.

Scillitin is the active, medicinal principle of scilli, or squills. Scillitin is an expectorant and a diuretic. In acute or chronic bronchitis, where the sputum is tough and difficult to expectorate, the tenacious mucus is liquified and the cough is made easier by the administration of scillitin. Emetine and scillitin make an excellent combination for bronchitis.

In the treatment of dropsies, not dependent upon acute nephritis, scillitin is extensively used and it increases the quantity of urine. Caffeine and digitalin may be added to it with advantage. The dose for adults is two or three granules, to be taken every one or two hours. For children, from one to five years of age, from five to ten granules may be dissolved in twenty-four teaspoonfuls of water, and one teaspoonful given every hour. In large doses scillitin irritates the gastro-intestinal mucous membrane and produces vomiting and diarrhea. It also irritates the kidneys and bladder, producing bloody-urine and stranguary. It is contra-indicated, therefore, in inflammatory conditions of the alimentary canal and inflammation of the kidneys.

The chief action of scillitin—and its value to the therapeutist is in this direction—is in diseases of the bronchial tubes where little secretion is present, but where a harsh, dry, irritating cough wears out the patient. If scillitin is exhibited in these cases, the scanty and tenacious sputum becomes more plentiful and fluid and within twenty-four hours as a rule a marked reduction of the irritation is noticed. Small doses often repeated are best. It should never be pushed to the point of nausea.

As a diuretic, scillitin is most reliable in cardiac dropsies but should never be administered when nephritic conditions are present. It stimulates the heart muscle, improves the circulation therefore and strengthens the pulse markedly. The best effects are obtained by giving this remedy in conjunction with apocynin or digitalin or cactin. One to two granules of scillitin and two granules of cactin every three hours will produce a marked diuresis. Some patients exhibit a marked intolerance to scillitin and even moderate doses are attended with nausea, purging and severe abdominal pain. Should these symptoms be apparent, scillitin should be immediately suspended. In diabetes, very minute doses have proven effective to check the renal flow. Grain 1-67 should be dissolved in six teaspoonfuls of water and one teaspoonful, administered hourly. It should never be long continued in any case or in any dose. Briefly, scillitin is indicated in chronic coughs with scanty and tenacious sputum; in cases of dropsy where the cardiac origin is evident;

where high-colored urine in small quantities is passed with a sense of "pressure" in the bladder, and, in small doses, in hypersecretion of urine. In general asthenic conditions, scillitin is contra-indicated.

CHAPTER XXXIX.

SODIUM SALICYLATE.

Dose—Gr. v. to xxx. every two or three hours, preferably given in gr. v tablets, to be followed by a glassful of water.

In the treatment of acute articular rheumatism, salicylate of sodium comes as near being a specific as it is possible for a remedy to be. The more acute the pain, the greater the swelling and the higher the fever, the more likely are quick and marvelous results produced. It is necessary to give it in good-sized doses.

To patients of fifteen years and over, fifteen grains in tablets should be given every two hours, to be followed by a glassful of water. This dose should be continued until there is some improvement, or until the noises in the ears become well marked. Half of the above dose may then be given every two hours.

It will frequently happen that after the second or third dose some patients begin to feel marked improvement, in the course of a few hours more sleep often comes, and after a few days the disease has entirely disappeared.

Such results as above noted are not rare, but can be produced in the majority of acute cases. There is no medicine that seems to be more clearly indicated or absolutely demanded than sodium salicylate in the treatment of acute articular rheumatism. If this is the belief, there

is but one thing to do, *push it in large and frequently-repeated doses until some effect is produced.*

The reason this remedy acts so well is because it is eliminative and neutralizes the materies morbi. It produces an increased flow of bile, of urine, and of the perspiration, and in this way the poison is eliminated. Fortunately this remedy rarely fails in acute sthenic cases. If it should, the patient is likely to have a long siege of it, and quite a list of remedies will likely have to be tried.

The joints should always be enveloped in cotton. Aconitine should be used when the fever is high, not simply because there is rheumatism, but because there is fever. Salicylates are given solely because there is rheumatism, whether there is fever or not, but, as has been said before, the more acute the attack and the higher the fever, the more gratifying will be the results.

Aconitine may be given in conjunction with salicylates when the fever is high. Aconitine rarely makes much impression on fever unless it be given according to Shaller's rule, every half-hour. If aconitine is given every two or three hours there will be very little reduction of fever, not only in rheumatism, but in all fevers. Gradually withdraw the aconitine as the fever diminishes. Gradually withdraw the salicylates as the pain, swelling and fever grow less. The chief reason why relapses occur is, that the remedy is withdrawn too quickly. Continue to give salicylates three times a day for several days after all acute symptoms have subsided.

It is generally best to give it in conjunction with 30-grain doses of citrate of potash. It is a very excellent plan to combine the potash with the salicylates throughout the entire treatment, from the very start. The reason for this is, while salicylates relieve all pain more quickly than any other remedy, they do not prevent heart complications as well as the alkalies. By a combination of these two remedies we have something that cannot be improved upon at the present time, as long as the medicines agree with the patient. Unfortunately salicylates are frequently disagreeable and nauseating. The stomach often rebels against the sickening sweetness of this remedy. It sometimes produces cardiac depression, and long-continued use deteriorates the quality of the blood. For those patients who cannot take large doses, or if there is any reason why small doses are preferred or necessary, two or three granules of colchicine may be given with small (five-grain) doses of salicylates every three hours. These small doses given alone can have but slight influence over rheumatism, and the colchicine alone, is not, as a rule, as efficacious as the salicylates, but given in combination the curative property of each is increased and those physicians who object to the larger doses of salicylates can thus still prescribe them effectually in small doses. When pain is severe in acute cases, particularly so if the heart is involved and pericardial pains are severe, hypodermic injections of morphine and atropine are often required. Ice-bags or cloths wrung out of ice-water should be applied directly around the

acutely painful joint. If the pain is located in the ankle or wrist, these parts may be immersed in ice-water, and it is often surprising how rapidly severe pain subsides and the patients fall asleep.

In cardiac pains ice-bags should be applied over the region of the heart and may be continued for hours. If chronic rheumatic pains resist medication, hot air, as applied by Betz apparatuses, will produce many cures. After acute symptoms have subsided and the patient is convalescent and shows signs of anemia, give nuclein tablets and arsenate of strychnine.

CHAPTER XL.

SPARTEINE SULPH. (ALK.).

A SUBSTITUTE FOR DIGITALIN.

Standard granule—Of the sulphate; gr. 1-6, gm. .01.
Dose—One to two every two or three hours.

The tops of cytisus scoparius, or broom, contain two active principles. One is scoparin, which represents the diuretic and drastic properties of broom, and the other is sparteine, which represents the heart-tonic properties of the plant.

Sparteine sulphate is similar in its action to digitalin, as far as its action upon the heart is concerned. It reduces a rapidly-beating heart to the normal, strengthens its action, relieves irregularities and reduces dropsical effusions due to enfeebled cardiac action. It is superior to digitalis because of its stomachic and tonic effects, because it is free from cumulative action, and chiefly because it produces an influence upon the heart in about thirty minutes. This latter is an extremely important fact, for in serious conditions, it is not necessary to wait one or two days for digitalis to begin its effects, for sparteine, in doses of two granules, will cause perceptible effects very quickly.

Its indications are the same as for the use of digitalis, rapid and feeble pulsation, irregularity, palpitation, embarrassed circulation, as when pro-

duced in weakened cardiac muscles, as is shown by dypsnea, engorgement of the liver, scanty urine and dropsy.

The organic lesion that is most greatly benefited, is mitral regurgitation. It is of no value in dropsies of renal or hepatic origin, only in those following enfeebled heart's action.

It seems strange that sparteine is not more frequently used. It certainly has many advantages over digitalis and its derivatives, and should be tried whenever digitalis is indicated. Its action is just as certain, for digitalis frequently fails completely.

Sparteine is a better all-around heart tonic than digitalis in correcting, not only the symptoms of organic changes, but functional as well. It is better, because it does not derange the stomach, it acts very promptly and produces similar effects upon the heart, and then the fear of cumulative effects need not worry the physician.

As the effects of a dose last about four hours, it is best to give gr. 1-3 every four hours. If it does not produce some desirable results within twenty-four hours, three granules may be given every four hours.

CHAPTER XLI.

STROPHANTHIN (GLU.)

A SUBSTITUTE FOR DIGITALIN.

Standard granules—Gr. 1-134, gm. .0005; gr. 1-500, gm. .000125.

Dose—One to three granules every half to two hours.

The National Dispensatory sums up the action of Strophanthus as follows: "That it invigorates heart muscles, while dilating its cavities and the arteries, and yet raises the pressure within them, leaving the pressure in the veins unchanged; that it reduces the force and the frequency of the heart beats, and regulates its rythm when irregular; that it is diuretic; that its effects are not cumulative; that occasionally it excites nausea, vomiting and diarrhea."

From the above description, strophanthin may be successfully prescribed in all irregular actions of the heart resulting from either organic or inorganic conditions, provided the heart's action is below the normal, that is, in a weakened state.

Some authorities place strophanthin on a par, or even superior to digitalis and its derivatives. This is probably so in some instances as digitalis fails, and not only fails, but aggravates existing symptoms. Under such circumstances, strophanthin may be given a trial by prescribing two or three granules gr. 1-134 every four hours and, if

even slight improvement is manifest after two or three days of treatment, continue the remedy. The dose may even be increased if no effects are produced, as long as the heart's action is feeble, or irregular, or dropsy exists.

This remedy is frequently given in typhoid fever, pneumonia, or in any severe disease which has produced a weak pulse.

In all diseases which are likely to prove a severe strain upon the heart, it is best to give large doses of strychnine during the course of the disease, to keep up the strength of the heart and not permit it to become feeble.

Strophanthin may be successfully used in organic diseases, particularly in mitral stenosis which throws the work upon the right ventricle, dilating it and producing congestion of the lungs.

It also acts as a diuretic and successfully removes the dropsical effusion from both serous cavities and from the cellular tissues.

Strophanthin acts quickly, its effects are sometimes produced within an hour, and as it acts as a stomachic tonic, it certainly has advantages over digitalis. If digitalis fails to produce desired results, strophanthin is certainly a good substitute; if this fails, then sparteine, convallamarin, cactin, each combined with strychnine, should be tried. There is still some hope as long as these remedies have not been given a fair trial in any or all abnormal heart conditions.

CHAPTER XLII.

STRYCHNINE (ALK.)

Standard granule—Gr. 1-134, gm. .0005.

Dose—One to six three times a day, or one every half to one hour under special conditions.

Strychnos nux vomica contains two alkaloids, strychnine and brucine. The yield of strychnine is from 1-4 to 1-2 per cent, while that of brucine is 0.12 per cent.

These two alkaloids are similar in their action; but brucine, being much milder, is preferred by some when prescribing for children. The following is the list of alkaloidal granules prepared from the various salts of strychnine: The arsenate, gr. 1-134, gm. .0005; hypophosphite, gr. 1-134, gm. .0005; nitrate, gr. 1-67, gm. .001; sulphate, gr. 1-134, gm. .0005, and the valerianate containing gr. 1-134, gm. .0005.

In dosimetric practice the arsenate is more frequently used than any other salt. Its chemical composition is as follows: Strychnine 72.5 per cent, arsenic 12 per cent, water 15.5 per cent.

According to Bartholow, "The effects of strychnine are exerted on the spinal cord at the seat of motor function."

"When taken in quantities just sufficient to produce sensible physiological effects, strychnine induces, in man, a feeling of restlessness, perhaps accompanied by trembling in the limbs and some stiffness in the neck and jaws. When

a somewhat larger amount has been taken, there may be general muscular twitchings and startings with stiffness and stricture of the throat and chest."—*H. C. Wood.*

It is sometimes necessary, in the treatment of neurasthenics and others, to push the administration of strychnine until the first physiological effects are produced, before any impression can be made upon the case. To produce this effect, two granules of the nitrate, gr. 1-67 each, may be given every hour until a feeling of stiffness in the neck and jaws is perceived; one-half of the dose may then be continued every two hours.

One-twelfth of a grain of strychnine, taken in a single dose, will produce, in a majority of persons, some physiological effect, which is usually manifested within half an hour. When giving strychnine for the above purpose, it is best to administer it in solution. In cases of accidental poisoning or attempted suicide by means of strychnine, hydrate of chloral is the best antidote, after the stomach has been evacuated.

Strychnine is an exceedingly bitter medicine. When it is taken through the mouth, its first action is to augment the secretions of the stomach and intestines and to increase peristalsis.* It may be used, therefore, during convalescence; to restore the appetite in dyspepsia;

*This is due, in a great measure, to the intensely bitter taste. We often make use of this in atonic conditions of the digestive organs, by giving the granules in solution at frequent intervals. For this purpose small doses suffice, three or four granules in half a glass of water being all that is necessary. When for any reason the bitter taste is an objection it is best covered with saccharin, one-half to one granule of each granule of strychnine. —PUB.

to promote better digestion by increasing the quantity of gastric juice and to overcome constipation, by increasing intestinal secretion and by stimulating the muscles to more vigorous peristalsis.

Strychnine is a useful adjunct to all cathartics. It should be used, especially, in constipation of the aged, or in those individuals who take little or no muscular exercise. In all reflex vomiting, especially in pregnancy, one granule of the hypophosphite of strychnine, given every hour, frequently cures the patient. In the morning vomiting of drunkards, two granules of the arsenate and two of arsenate of soda will often procure relief.

In poisonous doses, strychnine produces death by paralysis of the respiratory muscles, but in small doses it is a powerful respiratory stimulant. In all chronic lung diseases, where the patient is unable to exercise sufficient muscular power to completely expel the mucus, two or three granules of strychnine arsenate given every two hours will often produce surprising results. In the vomiting of phthisis, Bartholow considers the strychnine as the most effective of all medicines.

Upon the heart, strychnine is a very potent stimulant. It increases the tone and strength of its action, contracting the arterioles and raising the blood-pressure. Strychnine is one of the most useful of all heart-tonics and stimulants, and should be given in all cases where there is irregular or feeble cardiac action, especially in asystolia and dilation, and in those chronic forms

of heart-disease in which digitalin, cactin, sparteine and other heart remedies, after a most faithful trial, fail to make any impression upon the diseased organ. In these cases, it is best to administer strychnine in doses of three or four granules, gr. 1-134, every two hours, not with much hope of effecting a cure, but for the reason that it is the best medicine that can be given to prolong life as long as possible.

Strychnine is the most useful general tonic, and the most powerful incitant of the vital functions that we possess. There is no depressed state of the system in which strychnine is not indicated, and in which it may not be used to advantage. During the prodromal stage of fevers, when the temperature is abnormal, and when general depression exists, no remedy can so effectually restore the patient to his normal condition as strychnine and phosphoric acid, given in doses of one or two granules of each, every half-hour.

Throughout the course of all fevers strychnine is one of the most useful remedies, because it sustains the heart and keeps up the tone of the nervous system. For this reason it has been added to the defervescent remedies, and in combination with them forms granules, known as "Defervescent Compound" and "Dosimetric Trinity." If medicines do not produce their usual and expected results, through failure to make an impression upon the nerve-centers because of a low degree of vitality, strychnine will stimulate the nerve-tissue and arouse it from the depression produced by disease, so that, when

other medicines are administered, they are more efficient in their action.

It may be said, then, that in the treatment of all diseases better and quicker results are obtained from other medicines when strychnine is given therewith. In the treatment of malarial diseases, quinine is made more potent if given with arsenate of strychnine. In the treatment of many cases of atonic diarrhea, dysentery, and cholera, improvement does not occur until strychnine has been administered.

The action of digitalin is greatly increased when combined with strychnine. Digitalin sometimes fails to effect a cure when given alone, but as soon as strychnine is used improvement is manifested. This is true, also of all heart-remedies. Strychnine is needed in connection with them to energize the cardiac nerves and muscles.

"Strychnine exalts all the functions of the spinal cord—reflex, motor, vasomotor and sensory—the latter being least affected."—*Potter.*

Strychnine is a remedy which, in its effect upon the nervous system, closely resembles the action of electricity. There is better receptivity and conductivity; there is increase of nerve-energy and this energy is imparted to the voluntary and involuntary muscles causing them to respond and contract with more vigor. This influence upon the muscles is particularly shown when strychnine is administered in cases of partial or complete paralysis, and in cases of uterine inertia. In incontinence of urine, also when retention is the result of partial paralysis

and when constipation is produced by absence of peristalsis, strychnine is a most useful remedy to restore irritability and contractility to the paralyzed involuntary muscles.

This action is still further shown when, in case of labor, the uterine contractions are feeble, or have ceased altogether; vigorous contractions may be induced by injecting, hypodermically, 1-20 of a grain of nitrate of strychnine, or by administering two granules of the hypophosphite every half-hour until ten granules have been taken.

If post-partum hemorrhage is anticipated (it having previously occurred in a given case, or because of the flabby condition of the uterus), 1-30 of a grain of the nitrate of strychnine should be given subcutaneously, and this should be repeated, if necessary, within half or one hour. As soon as the placenta has left the uterine cavity, two or three grains of ergotin should be administered hypodermically; and this should be repeated every half-hour until permanent uterine contraction is assured.

It is one of the tenets of dosimetry, that any unfavorable tendency of the disease should be anticipated by the early application of remedies, in order to prevent its occurrence. Post-partum hemorrhage should be anticipated, when, in previous labors, uterine contractions have been feeble and the loss of blood considerable. In these cases, strychnine should be administered more or less continuously, during the entire period of gestation. Two or three granules of the arsenate may be given three times a day for

one month, then for one or two weeks give quinine and iron granules, when strychnine may be again resumed in the form of the hypophosphite and administered for several weeks. This method, or one similar to it, should be followed and the result will be more vigorous uterine contractions.

The paralysis accompanying capillary bronchitis, diphtheria and peritonitis should also be anticipated and prevented, by giving strychnine throughout the course of the disease. When given in peritonitis, it prevents distention of the intestines, or tympanites, a condition which is always dreaded and is very difficult to overcome. In this disease two or three granules of the hypophosphite may be given every two hours. If it has not been given from the onset of the attack, as a preventive, it may be administered, even if tympanites is marked, with the hope of inducing contraction of the intestines and expulsion of the gas.

It is much more rational to anticipate the fatal tendencies of disease, and to prevent them by appropriate medicines, than to wait until they have made their appearance.

To postpone the administration of strychnine in capillary bronchitis, until with each inspiration there is sinking of the abdominal wall along the margin of the ribs, is absolutely wrong. Good results cannot then be accomplished, paralysis has already set in and even strychnine may fail to stimulate nerve-tissue which has been poisoned by carbolic acid gas. Strychnine is a valuable remedy to use in the treatment of

paralysis, especially when it follows in the course of diphtheria, rheumatism, malaria and lead-poisoning. In paralysis of long standing, where muscles no longer respond to the application of electricity, this remedy is useless except as a general tonic.

When impotence is due to sexual excesses, and there is lack of muscular tone, two granules of arsenate of strychnine and two of phosphoric acid, given every three hours, will, in the course of a few weeks, effect a cure. Ergotin in two-grain doses is a useful adjunct in the treatment of this condition. No remedy is so strongly indicated in surgical shock and in collapse as strychnine, but only in very large doses. According to Hare, "not less than 1-20 of a grain should be employed, hypodermically, every half-hour."

Strychnine is so strong a nerve stimulant, that the writer never finds it necessary to prescribe alcohol in any form and, during years of very active professional life, he had learned that it is possible to practice medicine very successfully without using it at all. In cases of typhoid fever and pneumonia, where whisky and brandy are most frequently used, it has been demonstrated that patients recover more rapidly, and are in a better condition at the end of the disease, without alcohol than with it.*

The prescribing of alcoholics has become a habit and, like all habits, excuses are easily made for it. The majority of adult patients are

*To this we would add our most emphatic and unqualified approval.—PUB.

fond of alcoholic drinks and physicians usually strive to please their patients. Strychnine replaces alcohol. It is a true tonic and stimulant and is free from the evil tendency of forming a habit. In conjunction with atropine, glonoin or caffeine it may be used in all cases of emergency where whisky is generally prescribed.

As a substitute for alcoholic liquors, the wonderfully stimulating powers of strychnine are demonstrated, when it is administered to one who has been surfeited with drink and the usual glass of liquor fails to awaken a response, or to make an impression. That is, the customary drink does not steady the trembling, palsied body, clear the benumbed brain, or loosen the paralyzed tongue. In these cases, even the stomach is rebellious and rejects the favorite drink, and the shattered nervous system no longer exercises its controlling influence. Hypophosphite of strychnine is the only remedy that can still arouse the alcohol-soaked brain and restore the narcotized and almost useless mass to its former high position as ruler.

This wonderful medicine can be used, not only as a restorative but, also, as a preventive against the use of liquors. There is an unfortunate, diseased class of people, who abstaining from intoxicating drinks for weeks and months, after a variable period become restless, nervous and dissatisfied with themselves and their surroundings and possessed with a desire, a thirst, an irresistible craving; they drink, and by the attempt to satisfy this insatiable thirst they become drunk, and remain so for days

until nature is exhausted and ends it all in a prolonged sleep, or in an attack of delirium tremens.

If these unfortunate creatures could know, that when this restlessness first comes on, a hypodermic injection of 1-30 of a grain of nitrate of strychnine, administered once or twice daily, would so tone the nervous system and subdue the restlessness, that the stage of irresistible thirst might never be reached, if they could know this, I repeat, many a man, yes many a woman would be saved from a periodical spree.

It is the duty of every physician to make a trial of this remedy for the purpose of preventing drunkenness, in all cases over which he has control. Like all remedies this one may fail sometimes but it is usually successful.

Best results in the handling of this class follows, when it is possible to strictly confine the individual, in order to have complete control and prevent him, for at least one week, from drinking alcoholics.

ASTHMA.

In the treatment of asthma, strychnine has given excellent service in completely curing this disease. To obtain best results, the arsenate of strychnine should be given in gr. 1-30 and gradually pushed, until in the course of four weeks, one-fifth of a grain is taken three times a day.

If improvements manifest themselves before this dose is reached, hold the remedy at that place. Sometimes it is not necessary to increase it beyond one-tenth grain.

CHAPTER XLIII.

SULPHOCARBOLATES.

Standard granules—Calcium sulphocarbolate, gr. 1-6, gm. .01; calcium sulphocarbolate, gr. 1-6, (tablets only); calcium sulphocarbolate, grs. 2 1-2, (tablets only); calcium sulphocarbolate, grs. 5, (tablets only); sodium sulphocarbolate, gr. 1-6, gm. .01; sodium sulphocarbolate, gr. 1, (tablets only); sodium sulphocarbolate, grs. 2 1-2, (tablets only); sodium sulphocarbolate, grs. 5, (tablets only); zinc sulphocarbolate, gr. 1-6, gm. .01; zinc sulphocarbolate, gr. 1, (tablets only); zinc sulphocarbolate, grs. 2 1-2, (tablets only); zinc sulphocarbolate, grs. 5, (tablets only); zinc and codeine compound (Shaller & Abbott)—Zinc sulphocarbolate, gr. 1; codeine sulphate, gr. 1-4; hyoscyamine (amor.), gr. 1-250; strychnine sulphate, gr. 1-134.

Particularly indicated in nervous and asthenic diarrhea; adult dose, 1 every one or two hours.

Intestinal Antiseptic (W-A)—The "Waugh-Abbott Intestinal Antiseptic" is a mixture of the sulphocarbolates of lime, soda and zinc. It is indicated in all fermentive conditions, and their name is legion. The average adult dose is five to ten grains (one to two tablets) every two hours according to condition or effect desired; children in proportion.

Sulphocarbolates are preëminently the most useful intestinal antiseptics for continued use. It is very easy to demonstrate their great usefulness, as the conditions requiring their administration are very common.

TYPHOID FEVER.

One of these conditions exists in typhoid fever: where the evacuations are frequent and very foul, 5 to 10 gr. doses of either of the salts, or of W-A Intestinal Antiseptic, not only checks the of-

fensiveness of the stools, but lessens the number. As the presence of sulphocarbolates in the intestines checks and prevents fermentative action, the high temperature in typhoid fever begins to decline and can be kept down by the administration of these remedies throughout the course of the disease. It is best always in the beginning of typhoid fever, to give calomel in 1-10 gr. doses, every hour until the stools are changed from their very light color, to a darker one. After this, sulphocarbolates can then be freely given. They are comparatively harmless and 10 gr. doses or more can be given every two hours. The exception may be in regard to zinc. The sulphocarbolate of this salt has the same effect that the sulphate has and in some susceptible patients, vomiting is very quickly produced by the zinc salt.

In giving these preparations, it is best to give them in powdered form or, if a tablet is used, the tablet should be crushed and taken with a swallow of water. For children it must be given in solution. It is certainly a fact, that if treated on the above lines, typhoid fever will be of shorter duration than usual. Instead of running three weeks or more, patients are frequently up and about within two weeks. If this treatment be begun very early, the probabilities are, that very few cases can run their full three weeks' course. Calomel and the sulphocarbolates do certainly abort many cases of typhoid fever.

It may be necessary, along with this line of treatment, to give such tonics as strychnine and to reduce the fever by cold sponging or cold

baths. There is probably no means that will so quickly give satisfactory, and even pleasant results for that matter, and reduce high temperature in typhoid fever as will the application of cold water, either in the form of a bath, sponging, or a wet pack. This latter consists in wringing a sheet out of ice water, stripping the patient, and rolling him up in this wet sheet. A blanket is then wrapped around the wet sheet and the patient left in this condition for an hour or more. If the temperature has been very high, the probabilities are that the patient will soon pass into a quiet sleep and wake up thoroughly refreshed, and possibly in a perspiration. The patient should then be rubbed very thoroughly and dried and then simply cover with a blanket until a convenient time should come for dressing him.

Diarrhea is of frequent occurrence in hot weather, principally because of the changes that heat produces in foods, because unripe and unwholesome foods are eaten, and because it is difficult to understand that the heavy meals of meats and fats, so necessary in winter to produce animal heat, are decidedly out of place in warm weather. Neither is it necessary to eat such large quantities.

When the stomach has been overloaded and nature points it out clearly by epigastric heaviness, pains, belching and diarrhea, it is indicating as plainly as possible that improper food has been taken. Preventive means are best, but it is surely a great hardship for many people to diet. They certainly do continue to eat heavy food and plenty of it.

Where the stomach is overloaded, or if improper food has been taken, the quickest and most rational treatment is to produce vomiting. This can safely be done by drinking one or two pints of warm water and irritating the fauces with the fingers. There is nothing depressing or nauseating about this. If the patient is a child, give a teaspoonful of syrup of ipecac every 15 minutes, or one granule of emetine gr. 1-6. Vomiting is better than allowing the fermenting contents of the stomach to pass through twenty or more feet of intestines, irritating them all the way. The shortest route is by vomiting.

Dyspeptics soon recognize the fact that they have eaten something that disagrees with them, because of pain, or uncomfortable feeling in the stomach, or behind the sternum, or even in the throat. These symptoms may keep up for hours, and when the stomach's contents pass into the bowels, there is produced still greater irritation and disturbances.

Philosophically considered, vomiting certainly is the most rational means to prevent a long train of symptoms. It is better to part with that meal and be free from pain than to retain it and allow it to disturb the harmony of the entire intestinal tract throughout its lengthy course of over twenty feet.

Where fermentation and diarrhea occur, the sulphocarbolates certainly find a very useful field. After vomiting has been produced, or in case it was not practical to induce it, begin treatment by giving 1-10 of a gr. of calomel every hour to adults, and to children 1-20 of a gr. until the

bowels are thoroughly moved. To adults 5 to 10 grains of sulphocarbolate of sodium should be administered. If the diarrhea is excessive, the sulphocarbolate of zinc should have the preference, or 5 to 10 grains of the "Intestinal Antiseptic" will answer the purpose nicely, bearing in mind that zinc should be given the preference always in severe diarrhea. The sulphocarbolates of lime and soda are less harsh and can be more easily borne by a delicate or irritable stomach.

It seems almost absolutely necessary to begin treatment of these fermentative conditions in the stomach and intestines by thoroughly evacuating the bowels in order to remove their decomposing contents, and there is no better remedy than calomel followed by Saline Laxative. The calomel not only removes the fermentative contents of the bowels, but at the same time, by its antiseptic action, it destroys the germs and fermentative products. Then, to prevent a return of diarrhea, sulphocarbolates should be given several times a day.

DIPHTHERIA AND SCARLET FEVER.

In the treatment of diphtheria and scarlet fever, when the throat is badly ulcerated and the breath extremely foul, the sulphocarbolate of zinc is an admirable remedy to administer in solution, or to apply locally. If the child can do so, let it use a gargle of the zinc salt frequently. It is astringent, cleansing and germicidal.

Evidently considerable fever sometimes results from swallowing the secretions from ulcerated throats. These enter the stomach, possibly under-

got greater changes, and are absorbed into the general circulation and produces poisoning. It is not only a good plan to apply a strong solution of the sulphocarbolate of zinc directly to the diseased mucous membranes, but to give internally as large doses as can be well borne.

As the stomach is the receptacle into which is poured all kinds of foods and drinks, wholesome or unwholesome, as many pathogenic bacteria also enter here, and as much of the stomach's contents which have not always been normally digested, finally pass into the intestines, the gastrointestinal canal must form a nidus from which many gases and varied noxious fluids are absorbed into the circulation.

If even wholesome food is not properly digested, it undergoes fermentative changes. Normally perfect stomach digestion renders harmless many substances which would certainly produce serious symptoms, if absorbed, without the purifying action of gastric juice. Dyspeptics suffer particularly from moroseness, bad temper, and mental depression, simply because abnormal products are formed during digestion which are absorbed and produce the many irritable mental conditions of dyspeptics.

To illustrate the effects of such absorption, an interesting case of eczema will be cited. After several attacks of cholera morbus, produced possibly by eating tainted canned goods, eczema of the fingers made its appearance in an aggravated form. The indigestion following this cholera morbus was extremely obstinate and the state of eczema corresponded precisely with the gastro-

intestinal indigestion. In this case starchy foods could not be digested. The only relief and respite from intestinal indigestion, with its diarrhea and colic, and eczema, was produced by living entirely on eggs, meat and toast. The smallest amount of potatoes, rice, peas or acid fruits, as plums, cherries and sour apples, produced, first, an itching of the fingers which would soon be followed by an eruption of watery vesicles and inflammation. This would appear before bowel symptoms manifested themselves. In fact, this itching of the fingers was always the forerunner of an attack of colic and diarrhea. Evidently because starchy food could not be digested, it underwent fermentative changes, producing poisonous products which were absorbed into the circulation. The skin attempted to eliminate them and, in doing so, inflammation was produced. A day or two later the intestines undertook the elimination of this noxious matter and its presence in the bowels caused diarrhea and colic. Local applications were of no avail in the treatment of this eczema. Sulphocarbolates and bismuth subgallate were the only remedies that were of any value in this particular instance. While this case is given as an illustration, there are undoubtedly other conditions and diseases that are produced by improper diet such as has already been mentioned, as headache, despondency, irritability of temper, gout, rheumatism and neuralgia.

Sometimes fever is produced, particularly in childhood, from absorption of irritating products

evolved from an improper meal, which is relieved by the administration of a cathartic.

In constipation, because fecal matter is so long retained within the bowels, gases are formed which cannot find an outlet and are absorbed, producing frontal headaches; the breath becomes very foul, the tongue itself more or less coated. There is often a mental depression bordering on melancholia. There is loss of general muscular energy, brightness and snap that naturally belongs to all people, which is replaced by a languid, tired and irritable feeling. All of these symptoms are produced, as have been stated, by the absorption of gases, which are not formed under normal conditions, and which should have been eliminated but are now circulating in the blood as foreign substances. The lungs and also the skin tries to eliminate them, for fecal odor is decidedly prominent on the skin of those suffering from chronic constipation. Even in apparent health, if one should have considerable worry, or suddenly hear any sad news, or if anything of a depressing nature should occur, there are frequently produced all of the symptoms of indigestion. If bad news is received immediately after eating, or if one should become angry, the digestion of food is immediately checked. There is a feeling of weight and heaviness in the epigastrium, general distention of the abdomen, and large volumes of gas are belched, showing that the food, instead of undergoing normal digestion, ferments suddenly and, as a result, large quantities of gases are quickly formed. Worry, scolding, fretting and

anger are the direct causes of indigestion. It is simply impossible to worry and scold and at the same time expect food to undergo its proper digestion. It cannot do so, the food must ferment and putrify. It is far better, in times of great grief and trouble, business worries and cares, to eat nothing of a solid nature. During the very acutest of grief and trouble, it would be better to eat nothing at all, except, probably, to take some of the beef extracts in hot water, or liquid peptinoids, or somatose in hot water. These cannot very well undergo fermentation and a small quantity is very nutritious and sustaining.

Enough attention is not given to the condition of the bowels. Probably three-fourths of the women suffer from constipation and go from one to four weeks without a movement. It is simply impossible to expect to feel well when such conditions exist. Under these circumstances see that the bowels are thoroughly moved. It is sometimes a difficult problem but it is absolutely necessary and, after the bowels have been started, they should be kept in good condition by Saline Laxative, and all fermentative disturbances kept down by administration of sulphocarbolate of soda. In those cases where grief and worry and trouble have checked digestion, the most rational treatment is to produce vomiting and empty the stomach, then thoroughly evacuate the bowels by means of calomel and Saline Laxative and, when solid food is taken, administer sulphocarbolate of soda after each meal. It is also an excellent practice to give some preparation of pepsin along with each meal.

If it is found that any particular article of food disagrees, that is, cannot be digested, it should be eliminated from the diet. Whether food is digested or not, is shown by the fact that eructations and belching occur in which can be recognized gases that are evolved from that food. It is no uncommon thing for persons to have these eructations after drinking coffee in which the coffee is tasted, and so it is with many other foods. After eating fat meats or gravies, a sour, greasy fluid is frequently regurgitated. If any of the starchy foods disagree, such as potatoes or rice, or bread, eructations here are simply sour, without any particular flavor to them as in the case of coffee, cabbage or onions. In perfect digestion there should be no eructations, and when these are excessive and continuous, it simply shows that the stomach cannot handle the food ingested, and when it cannot do so and expresses itself in language plain enough to indicate what kind of food it cannot handle, this injunction should surely be followed and the food eliminated entirely from the list. It is not wise to try to force one's self to eat foods that cannot be digested, unless there can be a complete change in the habits of the individual. Plenty of vigorous exercise will enable even one with a delicate stomach to digest almost anything, but, if an active life cannot be lived, then the subject must accustom himself to such articles of food as he knows he can digest. Help is frequently obtained by taking various digestive ferments, either animal or vegetable pepsins, or the extracts of pancreas. Many of these substances

will certainly digest food in the laboratory and are also of benefit when given internally to assist digestion when the stomach and intestines cannot properly do so. This method is not particularly objectionable, if used only for a few days, but when constantly indulged in, it certainly destroys very greatly the usefulness of the stomach by lessening the secretion of the gastric juice. It is much better, in these cases, to give some such remedy as will increase the flow of gastric juice, such as a small quantity of bicarbonate of soda before meals, or any of the bitter tonics. All medical interference in such cases, while necessary for the time, cannot be relied upon and can in no way compare with physical exercise. There is no way of getting behind this one thing that, if ordinary daily work does not supply sufficient muscular effort, then gymnastic exercises must be resorted to. This is the best appetizer and digestant known. Unfortunately it means hard work, and many people are constitutionally opposed to it. If this could be taken in teaspoonful doses, it would certainly be indulged in to a greater extent than it is. Notwithstanding this, if one desires to become thoroughly cured of chronic indigestion, dieting and muscular exercise are the very best possible means of bringing about a cure.

DIETING IN DISEASE.

With regard to dieting in disease, in the vast majority of ordinary acute febrile diseases, particularly acute infectious diseases of children, solid food should not be administered. Give

plenty of pure cold water, even to infants. It is rarely ever contra-indicated.

In fevers, one would certainly not give solid foods under any circumstances. Liquid diet is the only one that is permissible. If there are no severe intestinal disturbances, milk can be given in febrile diseases. If milk cannot be taken or is objectionable, then some of the extracts of beef, white of an egg dissolved in cold water, peptinoids, or somatose may be freely administered. It is not absolutely necessary that a patient should be fed in these acute cases for two or three days. They certainly cannot digest food and it only brings on complications by adding indigestion to the already existing disease. Plenty of good cold water is of more value than all the food and fasting for one or two days is certainly beneficial. This applies particularly to gastro-intestinal diseases of childhood. In severe cases of cholera infantum, all food should be absolutely withdrawn for at least twenty-four hours. Give small quantities of water frequently or some cold aromatic tea. After the symptoms have improved, then a little barley broth or beef extracts may be given, but no solid food and no milk. Milk should not be given until the bowels are in a normal condition.

The diet can be well regulated and its fitness judged by one fact: if the evacuations are offensive, it shows decidedly that fermentation is going on instead of digestion and that something has been eaten, which certainly disagrees. As long as the stools are normal in consistency and are not particularly offensive, and so long as

there is not much gas formed, it certainly shows conclusively that the food is properly handled by both stomach and intestines. This, in fact, should be the guide in all of these intestinal difficulties and the change of food, or change of treatment, should be regulated accordingly. It must be particularly impressed upon our minds that, if the evacuations from the bowels are offensive, this offensiveness indicates very clearly that there is something wrong which needs attention. This offensiveness of the stools, both in sickness and in health, can be readily and quickly overcome by thoroughly evacuating the bowels and then giving sulphocarbolates with proper diet.

It is a strange and universal characteristic of adults, when suffering from gastro-intestinal diseases, that no matter how much pain or diarrhea follows eating, they will often continue to indulge in their usual diet. Fried potatoes, pork, veal, ham, eggs fried hard, boiled cabbage, corn, tomatoes, cucumbers, sausage, cheese and coffee, are among the most indigestible foods. Patients continue to partake of such a diet and yet they wonder why they do not get better.

With infants, a similar course is pursued; their usual diet is not only persisted in, but it is given in larger quantities because of the thirst of the patient. Neither do mothers hesitate to feed infants upon potatoes, corn and other indigestible foods. The great wonder is, therefore, not that so many infants die, but that so many of them live. The most potent of remedies used in the treatment of diarrhea, are powerless to effect a

cure if patients indulge in an improper diet.

The selection of a proper diet is far more difficult than is the selection of proper medicines, and the best possible means to get rid of this vexed question is to order the patient to fast. The first thing which a patient, who is suffering from diarrhea, usually says is, "What must I eat?" The answer should invariably be, "Nothing," and the more completely the patient refrains from eating, the sooner will he recover. Physicians must impress upon their patients the fact that lack of food, for a few days, does not result in death by starvation, and that no possible harm can come from such abstinence. Infants frequently go for a longer period without nourishment, and it does not injure them.

When severe diarrhea is present, no matter how much food is swallowed by the patient, he is, in reality, without nourishment so far as digestion and assimilation are concerned. The food which is given him is treated by the stomach as if it were a foreign body; the digestive fluids are diminished in quantity and inferior in quality, and the food is either rejected by the stomach or passed out with the stools unchanged, and can be easily recognized. Food given under these circumstances cannot benefit the patient, but only adds to the difficulty.

How much more reasonable, then, does it seem, to withdraw all food for one or two days and give the stomach and intestines a rest. While the gastro-intestinal canal is thus empty the remedies applied are brought in immediate contact with the diseased mucous membrane, and

are much more effective, and more quickly absorbed than when mixed with quantities of food. When a patient's knee-joint is inflamed, he is, indeed, a poor surgeon who permits him to walk and run. When a patient's gastro-intestinal tract is irritable and inflamed, he is a very poor physician who permits these structures to be kept in action by vainly attempting to digest food. This attempt at digestion is just as irritating to the inflamed stomach and bowels as is walking to the inflamed knee.

What food, then, should the patient take who has diarrhea? For the first day let him eat no food of any kind. If thirst is intense, cold water may be given frequently in small quantities, or pieces of ice may be held in the mouth and allowed to melt. If cold water disagrees, give hot water or plenty of ordinary tea. In treating cases of cholera infantum, it is imperative to stop nursing the child for one or more days; when this is done improvement occurs rapidly. Infants should be given small quantities of water, or some aromatic tea made without sugar. Even in cases that are not severe they should not be allowed to nurse constantly, but only at stated intervals. They cry and fret because of thirst and pain, possibly of hunger, constant nursing overloads their stomachs, constant diarrhea prevents absorption and assimilation of food, and only aggravates their condition. After one or two days of fasting, barley-water may be given, or barley-gruel, in which lamb or beef has been stewed. In making this gruel it is best to use whole barley, which may be ground

in a coffee-mill; after being thoroughly boiled it should be strained before it is allowed to cool. This is the most easily digested of all foods and as nutritious as any. If patients tire of barley, the white of an egg should be stirred into a glassful of water and slowly taken. This may be repeated every three hours; smaller quantities may be given to children. This is easily digested, and is the representative nitrogenous food. As it is almost tasteless, adults and even children drink it without being aware that they are taking food.

Beef tea may also be given. If patients object to the extracts found in the market, an excellent article may be made according to the following receipt: One pound of lean beef should be chopped fine and put into one pint of cold water and allowed to stand for one hour, then the beef and the water should be placed over a slow fire and allowed to simmer for two hours, when the fluid should be poured off and the juice thoroughly pressed from the residue and added to the fluid and finally enough water added to make one pint. To this sufficient salt must be added to make it palatable and the patient may drink it hot, or after it has been placed on ice. Oyster stew, made with or without milk, may also be given, but only the broth should be used. Chicken broth should never be given to those suffering from diarrhea; it is very likely to aggravate the disease. In the feeding of infants, barley broth should first be tried, or some of the artificially prepared foods as "Malted Milk," "Somatose,"

"Liquid Peptonoids," or other preparations which the physician has found to be useful.

If cow's milk is fed to infants, it should be thoroughly sterilized, not only when given in cases of sickness but at all times. Lime-water may be added to correct vomiting, and barley-water to prevent caseine from forming into hard masses. Toast is the only form of bread which should be allowed those who have diarrhea. In the process of toasting, some of the starch is transformed into dextrine and sugar, and the starch granules are ruptured, which makes digestion easier. While the majority of cases of diarrhea can be cured by a properly selected diet, or, rather, by fasting and the administration of medicine, there are a few cases which cannot be benefited by these means, but require absolute rest in bed. It is a good plan, when diarrhea continues unabated for one week, to put the patient to bed. Rest is an extremely useful auxiliary in the treatment of bowel disorders.

Besides the important part which sulphocarbolate of zinc plays in the treatment of gastro-intestinal diseases, it has been used as a wash, in surgical dressings, and to prevent septicemia. It is the one remedy used by the writer in the treatment of ulcerative stomatitis. If there is much fever, aconitine is added to a solution of zinc as follows: For a child of two years, ten grains of zinc and three granules of amorphous aconitine, gr. 1-134, are dissolved in three ounces of water, and a teaspoonful is given every half-hour or every hour. Topical applications may be

made in severe cases, using twenty grains of the zinc to an ounce of water.

As an injection for gonorrhea or leucorrhea, in the proportion of five grains to the ounce of water, it will be found to be an effectual remedy after the acute inflammatory symptoms have subsided.

CHAPTER XLIV.

TRIONAL.

Diethylsulphon-methylethylmethane—$C_2H_5CH_3—C—(SO_2C_2H_5)_2$.

Trional is probably the best and safest hypnotic for general use. It is usually very rapid in its action, frequently producing sleep, sometimes within five or ten minutes, generally, however, within thirty minutes after its administration.

If the mind is extremely active, filled with thoughts which will not permit sleep, with thoughts which cannot be suppressed, trional overcomes this mental activity and induces a sleep which is refreshing and from which, as a rule, no bad after-effects are experienced. It is probably better adapted to those who suffer from insomnia from worry and care, who are yet in apparent health. Still it may be given in all cases requiring sleep.

Its best results follow when given to those who lie awake several hours before sleep comes. Yet it is a great value in that class which awaken several hours before their usual time for rising.

There are many physicians who, if called out early in the night, are unable to fall asleep again. Here trional is applicable, because, of the rapidity with which sleep follows its administration. It will, particularly if taken in

hot water, insure a good night's rest on sleeping cars. In passing from a low to a high altitude many nervous individuals cannot, at first, sleep well. If trional is taken every other night until three doses are used, natural sleep usually comes again.

In breaking up the opium habit, trional is a good remedy to produce sleep so absolutely necessary during the nights of this trying ordeal.

As a rule, this remedy is not of much value in producing sleep in painful conditions or in the insane. Hyoscyamine is probably a better remedy in this latter class.

During sleep there is an anemic condition of the brain. Healthful, mental activity, worry, insomnia, inability to keep from actively thinking, all show, if not an actual congestion, at least, an excess of blood in the brain. This excess must be reduced before sleep can assert itself.

Even excessive muscular exercise, in those of nervous type, may produce wakefulness instead of sleep. It exhilarates instead of quiets and sends a large amount of blood to the brain through increased heart's action.

Insomnia is produced by an inequality of blood supply. The vaso-motor centers are incapable of producing a contraction of the cerebral arterioles. Too much blood remains in the brain. It must be distributed. That trional does this is evident from the following personal experience.

Being unable to readily fall asleep, the writer took grs. xv of trional. This was some years ago when little was said of its quick action. The

dose was taken when about ready to retire. Within five minutes, the hands and feet grew gradually warm. The entire surface was soon in the same condition, showing an afflux of blood to the surface, and, before there was time to undress, sleep had the mastery. It was the first time in six months that a full night's rest had been obtained, from 10 p. m. until 6:30 a. m.

There were no bad after effects. This experience led to formulating the following injunction: get into bed first and then take trional dissolved in hot water.

Dose: Ten to fifteen grains should be the initial adult dose. If quick results are desired it should be dissolved in a glass of hot water. It is not very soluble.

It may also be given on the tongue dry, to be washed down with cold water. The taste is not so marked.

One dose each night is usually sufficient. If fifteen grains fail to produce sleep, five grains may be added each succeeding night, until twenty-five or thirty grains are taken.

Following large doses, there may be slight heaviness of the limbs and numbness, and even slight vertigo, but nothing alarming or dangerous, as is sometimes the case when sulfonal is given. The effects of this latter remedy usually lasts the entire next day.

There are no contra-indications, it may be used even in organic diseases of the heart.

Trional is not a habit-forming drug. That is, it does not create an irrisistible craving for more. The continued use leads to large doses,

twenty-five or thirty or even forty grains to produce sleep.

While it does not produce a desire to take something which can only be satisfied by taking trional, as is the case with narcotics, yet one is in danger of learning to depend upon it, and to take it when even slightly sleepless, so sure and quick and effective and harmless are its results. In exaggerated insomnia from excessive worry, grief or trouble, it certainly is a welcome remedy.

CHAPTER XLV.

VERATRINE (ALK.)

Standard granule—Gr. 1-134, gm. .0005.
Dose—One every half to one or two hours.

Veratrine is prepared from the seeds of sabadilla and was discovered by Meissner in 1819. While veratrine is similar in its action to veratrum viride, it is not the active principle of this plant, which is represented, principally, by the alkaloids cevadine and jervine. Veratrine is at most a combination of alkaloids.

PHYSIOLOGICAL EFFECTS.

When veratrine is given in medicinal doses, it lowers the pulse sometimes below 50 a minute. The respiration is also reduced and so is the temperature in febrile diseases. From these effects its application can be very easily made in the cure of diseases, simply by taking those conditions in which there is an exalted heart action, corresponding increase of respiration, with high temperature, and it is in this class of diseases that veratrine is of particular value. Unfortunately, veratrine is a very severe irritant to the stomach and it is almost impossible to administer it in doses sufficiently large to reduce the temperature, without at the same time producing vomiting. This vomiting is probably one of the safeguards that accompanies the administration of this

remedy as it is almost impossible to produce fatal poisoning, even when extremely large doses are given, because of the emetic qualities of this drug. When very large doses are given, besides nausea and vomiting there is produced very great prostration and the heart becomes extremely feeble and the pulsations at times can hardly be distinguished. The retching is severe and, with this emetic effect, similar symptoms are produced which accompany all systemic emetics, namely, great muscular weakness and cold, clammy perspiration. The patient under the effects of veratrine in large doses is in danger of passing into syncope on sitting up in bed. It is therefore absolutely necessary to keep him in a recumbent position as long as the effects of veratrine are marked. There is sometimes produced even collapse or coma, but with all of this very severe array of serious symptoms, the patient, as a rule, recovers, principally on account of the prompt emesis that follows its administration. On account of these very severe symptoms which are so likely to follow the administration of veratrine, this remedy should never be given in debilatated cases. It is decidedly contra-indicated wherever there is feebleness of the pulse and of the respiration. It would simply make such conditions as these worse. It is also contra-indicated in all cases where vomiting might prove injurious. From this we should judge then that veratrine should be given only in those acute febrile cases, say in pneumonia, pleurisy, peritonitis and meningitis, where the fever is extremely active, the pulse bounding, the heart's

action strong and the patient robust. One granule may be given every half-hour until there is a reduction of fever and lowering of the pulse and respiration. Nausea, and even vomiting, is likely to be produced, but this is of no particular consequence when active fever is present. As soon as the patient shows signs of improvement, the remedy should be withdrawn, as it can be of no benefit whatever when there is absence of fever and absence of active respiratory and cardiac movement. It will produce only injurious effects when given after inflammatory diseases have become thoroughly established, as in the latter part of pneumonia or in pleurisy. In puerperal eclampsia, where the heart's action is vigorous, one granule of veratrine may be given every 15 minutes until nausea or vomiting is produced, unless the convulsions cease before this effect is reached. There are many physicians who find veratrine superior to all other medicines to reduce fever in active inflammatory diseases such as pneumonia. Aconitine, however, is a remedy that possesses all the qualities of veratrine in the rapid reduction of fever without any of its disadvantages such as nausea and general muscular collapse and depression.

Abbott's Defervescent Compound No. 1 is probably the most powerful combination that can be formed with which to combat acute, active fever. There need be no hesitancy in giving this granule to a strong patient, whose pulse and heart is bounding vigorously. When the temperature is 105 degrees, one granule may be given every fifteen minutes and, as improvement

is observed, the dose may then be given every hour. Veratrine is sometimes given to allay the pruritus which accompanies cutaneous diseases. One granule every two hours is sufficient.

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CLINICAL INDEX, WITH THERAPEUTICAL SUGGESTIONS.

NOTE: Therapeutical Suggestions are not followed by page number. In some instances the remedy is not referred to in the preceding pages. At other times full physiological effects and applications of same may be found under the chapter treating of that drug, which see.

ABORTING ACUTE INFLAMMATORY DISEASES: 10, 11, 33. A case of appendicitis aborted, 41. Aconitine, 51, the great jugulator.

ABORTION: To prevent, Buckley's Uterine Tonic. Morphine, codeine, hyoscyamine, viburnum; each checks uterine pains. Abortifacients; no medicine is safe and sure. Ergotin, 232, for bleeding.

ABSCESSES: Calcium sulphide, 185, prevents; nuclein to improve the blood. Triple Arsenates with Nuclein, six to twelve daily, when boils occur frequently.

ACIDITY OF STOMACH: Bismuth subgallate, gr. 15, before meals. Wash out stomach with one pint of hot water, dr. 2 of sodium bicarb. before meals. Strychnine arsenate, gr. 1-32, at meal time. Saline Laxative, teaspoonful before meals to move bowels freely. Diet—abstain from tomatoes, starchy foods, sour fruit.

ACNE: Triple Arsenates with Nuclein, six to twelve daily. Calcium sulphide, ½-grain tablet three times a day. Bismuth subgallate to be rubbed in dry. Corrosive chloride of mercury, gr. 6, to emulsion of sweet almonds, oz. 6, and dr. 2 tinct. benzoin. Apply night and morning.

ACROMEGALY: Thyroid extract, 309.

ACUTE INFLAMMATORY DISEASES: Can be aborted, 10, 11, 33, 41, 51, 58.

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Adynamia: Remove cause. Strychnine arsenate, tonic and stomachic; Triple Arsenates, six to twelve daily. Quassin, three before meals; iron arsenate, 1-6 gr. granule after meals. Digitalin, 72, to tone heart.

After-pains: Hyoscyamine, two granules every half-hour; cicutine four granules every two hours; codeine, gr. 1-2 every two hours. Morphine and atropine injections hypodermically. Gelseminine, one or two every half-hour. Antifebrin, gr. 2 every hour for three doses.

Albuminuria: Glonoin, 252, for high vascular tension; apocynin, 97, two to four every three hours for edema. Gallic acid, gr. 2 three times a day in acute. Pilocarpine, 316, hypodermically in eclampsia. A case, 97.

Alcohol: Not necessary in disease, 353. Caffeine, 177, as a substitute for.

Alcoholism: Cicutine, 196, four to six granules quiets muscular and mental excitation. Capsicin, four granules every three hours, tonic. Strychnine nitrate, gr. 1-20 hypodermically, to break habit and as tonic. Dram doses of ammonium chloride sometimes sobers; strychnine, 354.

Alopecia: Pilocarpine, 320.

Amaurosis: Glonoin, for anemic; ergotin, for congestive; pilocarpine in albuminuria; strychnine arsenate or Triple Arsenates as a general tonic in anemic or in hysterical.

Amenorrhea: Aconitine with helenin, when from cold. Buckley's Uterine Tonic, one granule every two hours in acute; every four to six hours in chronic. Triple Arsenates with Nuclein in anemia. Manganese binoxide, gr. 2 after meals; sanguinarine nitrate, three granules every four hours; aloin, 94.

Anasarca: Pilocarpine, 316.

Anemia: Nuclein, 94-293, better results with Triple Arsenates, four to six granules a day. Iron ar-

senate, three granules three times a day. Arsenic, 119 Glonoin, 252. Splenic extract, 312. Symptoms of, 122.

Anesthetics: To prevent collapse, morphine and atropine hypodermically, 284. Collapse; hypodermic injections of glonoin, gr. 1-50, or atropine, gr. 1-40.

Angina Pectoris: Glonoin, 247—250, two granules every fifteen minutes; hypodermically, gr. 1-100. Nitrite amyl, inhale two to three drops; atropine and morphine, 284, hypodermically. Triple Arsenates, six to twelve granules daily to prevent attacks.

Antidotes: For aconitine, 74; for arsenous acid, 148; for pilocarpine, 162; for opium, 162; cicutine for strychnine, 198; for morphine, 286; pilocarpine for atropine, 319; mercury, 264.

Antipyretics: Aconitine amorphous, 56, most important in acute asthenic cases; acetanilid, for rapid effect. Cold pack, 343, most powerful means to lower temperature. Veratrine, 274, in acute febrile cases. Dosimetric trinity, 64, 67, 73.

Aphthae: Bismuth subgallate, dusted in ulcers; potassium chlorate wash, dr. 1, to glassful of water. Atropine, for salivation.

Apoplexy: Ergotin, 235, hypodermically. Oleum tiglii, gtt. 2, wiped on back of tongue when unconscious.

Appendicitis Aborted: 42. Ice applications. Move the bowels, using calomel, salol, sulphocarbolates with salines or castor oil. Flush colon; total fasting as long as fever exists. Give cold water per rectum. Morphine and atropine hypodermically, to relieve pain.

Appetizers: Strychnine. Quassin, 83, 322. Aloin, 93.

Arthritis: Triple Arsenates, six to twelve granules daily. Rheumatic; Salithia, salicylates.

Arthritis Deformans: Bryonin, rhus tox., colchicine; two granules of each every four hours. Potassium iodide, grs. 5 to 10, three times a day.

Ascarides: Quassin, twelve granules in cup of water for rectal injection; santonin, gr. 1-2 to 5, according to age, at bedtime. Saline Laxative in the morning. Rectal injections of vinegar and water, equal parts.

Ascites: Calomel, 267; apocynin, 97; compound jalap powder, one dram at bedtime. Elaterium granules, one to three every six hours until free purgation; stop alcoholics.

Asphyxia: From illuminating gas; hypodermic injections of 1-50 gr. glonoin, 251. Artificial respiration.

Asthma: Arsenic, 127. Cicutine, 200. Glonoin, 251. Morphine and atropine, hypodermically, 284; atropine, 155; hyoscyamine, 257. Quinine, 326. Lobelin 260. Caffeine, 177. Gelseminine, 243. Triple Arsenates, six to twelve daily to prevent; strychnine arsenate, gradully pushed until 1-10 to 1-5 grain is taken, three times a day; 355. Aspidospermine, two to four granules every fifteen minutes until relief.

Autoinfection: 68.

Baldness: Pilocarpine, 320.

Biliousness: Calomel, gr. 1, and soda, gr. 1; tablet every hour, 265; emetine, 227, gr. 1-6 every two hours; both to be followed by Saline Laxative. Euonymin, 239, four to six granules if pain over liver, every four hours. Aloin, 94.

Bites of Insects, Spiders, or Snakes: Ammonia dilute, for stings of insects; pure, if snake bite. Permanganate potash, local application of saturated solution; hypodermically, gr. 1 every one-half hour. Alcohol in large doses for venomous snake bites; glonoin if face is pale.

Bladder Catarrh: Barosmin, 110; arbutin, 113; asparagin, 112. Ammonium benzoate, gr. 15, if urine is alkaline. Cubebin, two to four granules every three hours. Cantharidin, two granules every two hours. Salol, gr. 10 every three hours to produce urinary asepsis.

Bladder, Irritable: Atropine, 157; hyoscyamine, 257; codeine, 282. Acid urine, potassium citrate, 111; ammonium benzoate, 112.

Bladder, Paralysis: Cantharidin, two granules every three hours; strychnine arsenate, 350, gr. 1-30 every three hours; ergotin tablets, gr. 2 every three hours. All three may be combined with good effect.

Bleeding: As a means of aborting acute disease, 11.

Boils: Calcium sulphide, 185, aborts or hastens formation of pus. Triple Arsenates with Nuclein, six to twelve tablets daily to improve the blood.

Bone, Softening: Precipitated calcium phosphate, gr. 10 to 20 three times a day.

Brain Congestion: Elaterium, four granules every six hours; ergotin, gr. 4, tablets dissolved every hour, hypodermically. Mental excitement, four to six granules cicutine, 197, every two hours. Ice to the head; feet and legs in hot water.

Breath, Fetid: Hydrogen dioxide, as a mouth wash, diluted with water; also teaspoonful in one-half glass of water before meals. Permanganate potash, mouth wash, gr. 5 to pint of water; internally, gr. 1 to glass of water before meals. Correct stomach and bowels. Naso-pharyngeal catarrh; carious teeth.

Bright's Disease: Digitalin, 214; apocynin, 97; glonoin, 252, for vascular tension. Acid gallic, gr. 5 to 20, three times a day, diminishes amount of urine and of albumin. Pilocarpine, 316, hypodermically for anemia; caffeine, 176, to increase flow of urine.

Bronchitis: Emetine, 227; apomorphine, 105; scillitin, 335, two granules every two hours; lobelin, 260; sanguinarine, three granules every two hours, in subacute forms; codeine, 279, for irritating cough. Aconitine in acute febrile stage, 58-72; calcium sulphide, 185; Waugh's anodyne, 283, for children.

Bronchitis, Capillary: Apomorphine, 102 to 103, with strychnine, 352; calcium sulphide, 185. Calcium io-

dized, gr. 1-3 every half-hour until relief. Scillitin, 335. Spirit of camphor, 5 to 15 drops in warm milk every half-hour until improvement. Flaxseed poultices, or cotton batting over entire chest and back. Emetine, 225 to 226. Avoid opiates, 281.

Bronchitis, Chronic: Emetine, 225. Triple Arsenates with Nuclein, six to twelve tablets a day. Scillitin, 335; sanguinarine, four every two hours to adults. Calcium sulphide, 185, for tough sputum; bryonin and colchicine, two granules each every three hours, if connected with rheumatism. Morphine and potas. cyanide, No. 1, two to three granules every two hours only for irritating cough.

Bronchorrhoea: Cubebin, four every two hours. Triple Arsenates with Nuclein, six to twelve tablets daily. Calcium sulphide, gr. 4 every two hours to saturation; turpentine, gtt. 15, in emulsion, every three hours.

Burns: Paste made of sodium bicarbonate and water relieves pain. White of egg spread on absorbent cotton; cover entire burn. Carbolic acid, grs. 5 to oz. 1 vaseline; apply. Bismuth subgallate, oz. 1, 107; vaseline, oz. 1; apply. Apply any mucilagenous substance or bland oil that may be at hand. Iodoform. Boric acid for foul ulcerations.

Cachexia: Triple Arsenates with Nuclein, six to twelve tablets daily. Quinine arsenate granules, gr. 1-6, three times a day. If skin is bloodless, glonoin, one granule every four hours. Good food, meats, eggs, oils and fats; plenty of fresh air.

Calculi, Biliary: Sodium phosphate, dr. 1, in pint of water, before breakfast, for months, to liquefy bile and prevent deposits. Alkaline mineral waters freely, as Bethesda, Saratoga, Buffalo Lithia.

Cancer: Triple Arsenates with Nuclein, six to twelve tablets daily. Gelseminine for pain, 244. Arsenic and zinc applications, 128. Cicutine, 199, for pain. Hydrogen dioxide and solution of permanganate of potash for cleansing. Cancer paste, 136. Nuclein, 299.

Carbuncles: Calcium sulphide, 185. Injections of carbolic acid directly into the mass frequently aborts.

Catarrh, Acute, of Respiratory Tract: Aconitine, 52, to abort and for fever. Atropine for free secretion only. Calcium iodized, 181. Laryngeal catarrh; calcium sulphide, 181. Catarrh accompanying contagious diseases; emetine, 227, to promote secretion.

Cerebral Anemia: Shown by pale face, with pressing or squeezing pain in head. Glonoin, 247, one or two granules every hour in acute, or, every three hours in chronic conditions. Triple Arsenates with Nuclein, six to twelve daily. Phosphates.

Cerebral Congestion: Shown by flushed face, throbbing headache. Aconitine, for fever. Ergotin, to contract blood vessels. Veratrine, 365, if fever is very active. Elaterin or croton oil to deplete circulation. Ice packs to head and nape of neck. Fasting for several days. No stimulants.

Cerebrospinal Meningitis: Aconitine, 58, for fever. Ergotin, 230, to control congestion. Gelseminine, 244, for fever and pain. Morphine, best remedy for pain and delirium. Cold bathing if fever is excessive. Acetanilid, 39, to reduce fever quickly.

Chancre: Acid nitrate of mercury applied pure, after cocainizing. Ung. hydrarg. nit., dr. 2 to vaseline, oz. 1. Acetanilid, 42—fill the ulcer with powder. Triple Arsenates with Nuclein, six to twelve daily. Bismuth subgallate, 167.

Chilblains: Turpentine applied twice a day. Tincture iodine dilute applied once or twice a day, but not enough to produce blistering. Ichthyol applied daily, pure.

Chloroform Poisoning: Atropine, 158. Glonoin, hypodermically, gr. 1-50. Caffeine, hypodermically, grs. 5 to 10. Artificial respiration.

Chlorosis: Nuclein, 301. Triple Arsenates with Nuclein, six to twelve daily. Arsenic, 119; arsenic

and iron. Fresh air; beef, milk, eggs. Splenic extract, 312.

Cholera Asiatica: Morphine and atropine hypodermically. Saturated solution camphor in chloroform, fifteen to thirty drops on sugar every half-hour. Atropine for collapse and to check secretion. Glonoin and atropine hypodermically to divert blood to surface. Copper arsenite, 207. Sulphocarbolates. Normal salt solution, intravenous injection.

Cholera Infantum: Codeine, 282, or Waugh's Anodyne, 282. Dieting most important, 366; at first, absolute fasting with plenty of water or aromatic tea, 366. Copper arsenite, 127 and 203. Atropine, 150. Morphine and atropine hypodermically, *cautiously*, 282. Calomel, gr. 1-10, 266, and Saline Laxative. Flushing bowels with normal salt solution. No milk until stools thicken. Bismuth subgallate, 165—a case, 205.

Cholera Morbus: Morphine and atropine hypodermically, best means, 282. Saturated solution camphor in chloroform, fifteen to thirty drops every half-hour on sugar. Hot water bag to abdomen. Unwholesome food and water the cause.

Chordee: Cicutine, 198, four to six granules at bedtime. Codeine, gr. 1-2 at bedtime or every two hours. Hyoscyamine, two granules every one-half hour until mouth becomes dry, beginning 6 p. m. Codeine and hyoscyamine combined. Camphor monobromated, grs. 5 to 10 at bedtime. Frequent urination will relieve.

Chorea: Fowler's solution, 124; push for physiological results or improvement. Cicutine, 200, two to four granules every two to three hours if movements too great. Triple Arsenates with Nuclein, three to six tablets daily; push until twelve or more are taken. Gelseminine, 243. Quinine, 328.

Cirrhosis: Sodium phosphate, teaspoonful doses night and morning during early stages. Potassium iodide, 5 to 15 grains three times a day. Triple Arsenates, six to twelve tablets daily. Euonymin, if

constant pain over liver and constipation; four to six granules before meals.

Colic, Hepatic: Atropine, 157. Morphine and atropine hypodermically every half-hour until relief, 284. Hyoscyamine, two granules every half-hour until mouth is dry. Chloroform inhalation when very severe. Sodium phosphate and alkaline mineral water to prevent formation of stone.

Colic, Infantile and Intestinal: Euonymin, 239. Waugh's Anodyne, one to two granules every fifteen minutes, 283. Glonoin, 248. Saturated solution of camphor in chloroform, three to five drops every hour. Bismuth subgallate, 165. For adults nothing better than morphine and atropine hypodermically every half-hour. May be used for children, but cautiously. Regulate diet. Hyoscyamine, 257. Hot applications to abdomen.

Colic, Lead: Alum, grs. 7 in capsule every hour until bowels are moved, excellent. Morphine and atropine injections for colic. Iodide potassium to remove lead. Frequent purging with Epsom salt. Sulphuric acid lemonade to prevent.

Collapse: Glonoin, 67, 247. Atropine, 158. Caffeine, hypodermically, 5 to 10 gr. Strychnine, 353.

Coma: Caffeine, 176, hypodermically. See Uremia.

Congestion, Acute: Glonoin, 251. Aconitine, 57, will dissipate.

Congestive Chills: Atropine, 158. Glonoin, 251.

Conjunctivitis: Mercury, yellow oxide, gr. 8; vaseline, oz. 1. Silver nitrate, gr. 2; water, oz. 1. Zinc sulphate, grs. 2 to 6; atropine, gr. 2, water, oz. 1. Boracic acid, grs. 10 may be added to the above, if much pus or used alone. Solution of adrenals, reduces active inflammation, 306.

Constipation: Aloin, 93, 94. Diet. Waugh's Anti-constipation Granules, 34, 95. Podophyllin, 321. Saline Laxative. Lobelin, 260. Warm water enemata every evening, two to eight pints of water, in knee-chest position. Strychnine, 348, gr. 1-20, three times daily in adults. Massage.

Consumptive: Treatment of, 236.

Contraindications for Aconitine: 58, 78. For aloin, 94. Apomorphine, 108. Atropine, 151. Digitalin, 214. Morphine, 290. Thyroid extract, 310. Pilocarpine, 316. Scillitin, 336. Veratrine, 379.

Convulsions of Adults: Chloroform inhalations. Cicutine, 199, six granules every hour. Morphine hypodermically in uremic. Veratrine, two granules in solution every half-hour in puerperal. Croton oil two drops wiped on back of tongue.

Convulsions, Infantile: Gelseminine, 243. Emetine, until vomiting. Calomel, gr. 1-10 every half-hour. Rectal injections of warm water. Apomorphine, 103. Cicutine, one granule in solution every half-hour for four doses. Hyoscyamine, 258. Chloroform inhalations. Aconitine, 58, if acute fever is present. Acetanilid for quick reduction of fever, 39.

Coryza: Bismuth subgallate, 168. Atropine, 153, to check secretion. Aconitine, 58, for fever. Aconitine and atropine may be given in combination. Calomel, gr. 1-10 every hour, followed by Saline Laxative. Atropine, aconitine and morphine comp. is an excellent granule; one every half-hour until dryness of mouth is produced.

Cough: Waugh's Anodyne for children, 284. Morph. et. Pot. Cyanide Comp. for adults, 280. Codeine, gr. 1-2 every hour, 279. Emetine, gr. 1-6 every hour. Lobelin, 260. Scillitin, 335. Irritative, digitalin, 211. Emetine, 225, dry cough. Hyoscyamine, 258. Calcium iodized liquefies tough sputum, 34. Calcium sulphide liquefies tough sputum, 188.

Cretinism: Thyroid extract, 308.

Crisis: Kola, 178. Caffeine, 180. Strychnine in 1-20 gr. doses, 353.

Croup: Iodized calcium, 181—the best possible medicine. Apomorphine, 105, to relaxation. Emetine, 226, to relaxation. Calomel, 269. *Croup, Diphtheritic.* Antitoxin, or nuclein solution, 300, hypodermically, immediately and repeat; give large

doses calomel. Calcium sulphide increases secretion; strychnine to prevent paralysis.

Cystitis: Arbutin, 110, 113. Asparagin, 112. Salol, 112. Cubebin, three granules every two hours to stimulate secretion. Hyoscyamine and codeine, to relieve pain. Sodium benzoate, 110. Alkalies, 110. Injections of solutions of boracic acid, 112. Silver nitrate, gr. 1 to water, 8 oz.

Deafness: Examine ear for inspissated wax; remove with 25 per cent solution of peroxide hydrogen or solution sodium bicarbonate.

Delirium: Cicutine, 196. Hyoscyamine, 258. If sthenic fever is present, aconitine, 69. Cold baths. Apomorphine, 103, to produce relaxation.

Delirium Tremens: Cicutine, 198, six every two hours. Morphine, 288, caution against. Chloral hydrate in 20-grain doses. Apomorphine, 103. Digitalin, 215. Capsicin, six granules with strychnine, gr. 1-20 every two hours. Hyoscyamine, gr. 1-100 hypodermically every hour for three doses, if necessary.

Dentition: Waugh's Anodyne, 283, one to two granules every half-hour if patient is in great pain. Aconitine, 69, if fever. Calomel and Saline Laxative to relieve congestion.

Diabetes Insipidus: Abstain from fluids. Ergotin, gr. 5 three times a day, lessens quantity of urine.

Diabetes Mellitus: Diet—exclude starchy and saccharin foods. Codeine restrains waste of sugar. Ergotin contracts congested nerve centers. Exclusive milk diet useful. In obese subjects, alkaline waters, thyroid extract. Arsenic.

Diarrhea: Diet most important, 354, 355. Zinc and codeine compound, 1 to 2 tablets every two hours. Sulphocarbolates, 359. Calomel, 265. Bismuth subgallate, 165—166. Copper arsenite, 203. Atropine, 154, in serous. Codeine, 275.

Diet in Disease: 366. In peritonitis, 278.

Dilatation of Heart: Apocynin, 98. Digitalin and strychnine.

Diphtheria: 31. Cactin, 173. Aconitine, 72. Caffeine, 177. Calcium iodized, 181. Antitoxin, 181. Calomel, 181. Calcium sulphide, 181, 186. Calomel, 269. Nuclein, 300. Pilocarpine, 318. Sulphocarbolates of zinc, 360. Strychnine, 352.

Dispensing Granules: 23.

Dominant Treatment: 18.

Dosimetric Granules: 14. Frequency and method of administration.

Dropsies: Apocynin, 35, 98. Bryonin, 169. Cactin, 172. Caffeine, 175. Convallamarin, 201. Digitalin, 212, 221. Calomel, 267. A case, 267. Pilocarpine, 316. Scillitin, 336.

Dysentery: Emetine, 227. Gelseminine, 243. Epsom salt, tablespoonful or more; move the bowels freely. Morphine and atropine hypodermically for tenesmus. Rectal injections of saline solution, or of nitrate of silver, grs. 2 to pint of water.

Dysmenorrhea: Alcohol, 92; prevent its use. Atropine, 157. Cicutine, 198. Gelseminine, 244. Glonoin, 249. Morphine, 273. Buckley's Uterine Tonic. Examine carefully as to the cause.

Dyspnea: Caffeine, in cardiac, 175. Digitalin, 211. Cactin, 2 to 4 every three hours. Aspidospermine, three every two hours, best in pulmonary.

Earache: Warm solutions of morphine or cocaine dropped into the ear. Hot water douches. If very severe, hypodermic injections of morphine and atropine.

Eclampsia: Morphine, hypodermically, large doses. Chloroform inhalations. Veratrum viride, 380.

Eczema: Triple Arsenates with Nuclein in chronic cases. Ichthyol, oz. 1-2; ung. zinc oxid. oz. 1-2. Apply. Arsenic, 127. Bismuth subgallate, 167. A case of, 361.

Emphysema: Oxygen inhalations. Triple Arsenates with Nuclein, six to twelve daily. Strychnine arsenate, gr. 1-20, three times a day. Calcium sulphide and nuclein freely, if expectoration is tough.

Endocarditis: Aconitine for fever. Substitute Dosimetric Trinity if pulse is weak. Salicylic acid if accompanying acute rheumatism. Morphine and atropine if pains are severe and anxiety great.

Endometritis: Ichthyol applied pure on cotton wrapped probe. Cotton pledgets saturated with glycerin placed against cervix. Buckley's Uterine Tonic, two every three hours. Regulate the bowels by Saline Laxative; applications of pure carbolic acid, or tincture of iodine, or saturated solution of pure iodine in hot carbolic acid.

Enteralgia: Diet; milk, eggs, beef only. If this fails, somatose, peptonoids and malted milk exclusively for a month. Arsenous acid, one granule at meal time; increase gradually until three are taken. Codeine sulphate, three granules, gr. 1-6 each, every one or two hours as needed for pain. Hyoscyamine, 257. Bismuth subgallate, grs. 15 before meals. Keep the bowels moving normally.

Epilepsy: Arsenic bromide, 118. Cicutine, 200. Potassium bromide; increasing the dose until full physiological effects are produced; possibly our best medicine.

Epistaxis: Tampon anterior and posterior nares with punk or gauze. The latter may be powdered with alum or tannin. Ergotin, morphine and atropine, hypodermically. Place feet and legs in hot water; ice to nape of neck and over nose. Prevent all efforts at sniffing, or drawing clots from the nostrils, or blowing the nose. Intravenous injections of salt water.

Epithelioma: Zinc chloride, 139. Arsenic, 132.

Eroticism: Cicutine, 198, full doses. Bromide of potash and monobromated camphor useful medicines.

Erysipelas: Aconitine, 72. Atropine, 159. Calcium sulphide, 186. Antistreptococcic serum, 313. Pilocarpine, 317. Ichthyol, applied pure, best local application to prevent spreading. Caffeine, glonoin, strychnine in debility or collapse.

Exophthalmic Goitre: Thyroid extract, 306. Galvanism cures many simple cases.

Facial Neuralgia: Arsenic, 143. Aconitine, 68. Gelseminine, 244. Acetanilid, 40.

Feet, Fetor of: Equal parts of salicylic acid and bismuth subgallate dusted over feet.

Felon: Ung. acid nitrate of mercury spread thickly on a cloth and thoroughly applied can abort.

Fever: Aconitine, 47, 58, the best for acute fever. Cold baths quickest and most certain. Acetanilid, 38, for quick results. Sulphocarbolates in typhoid. Veratrine, 379, in sthenic fever. Dosimetric Trinity, 73. Gelseminine, 244. Cold pack, 358.

Fidgetness: Cicutine, 197. Strychnine, in small doses only.

Fissures: Bismuth subgallate, 167. Silver nitrate applied pure. Tannin, dr. 1; pulv. opii, dr. 1; acid carbolic, dr. 1-2; vaseline, oz. 1. Apply.

Fissures of Nipples: Same salve as for Fissure of Anus. Acetanilid powdered, dusted into fissure. Flexible collodion. Use nipple shield in nursing; do not let child nurse directly. Hydrogen dioxide. keep pledget of cotton constantly wet with 25 per cent solution.

Flatulence: Quassin, four granules before meals, 322. Bowels must be normally moved and diet must be regulated. Use digestive ferments. In peritonitis, turpentine, fifteen drops in emulsion. Physostigmine. High rectal injections of warm salt water.

Food: Alcohol, not a food, 80, 81, 83. Somatose; liquid peptonoids, 85. See Diet.

Freckles: Tinct. benzoin, dr. 4; sodium biborate, dr. 2; emulsion sweet almonds, oz. 5. Apply several times a day.

Gastralgia: If severe and not chronic, hypodermic injections of morphine and atropine. Arsenic, one drop Fowler's Solution before meals. Bismuth subgallate, grs. 10 to 15 before meals. Codeine, three granules before meals. Diet.

Gastric Catarrh: Diet—Abstain from coffee and alcohol, particularly; milk cure. Arsenic, 144. Fowler's solution, one drop before meals. Emetine, 226. Bismuth subgallate, grs. 10 to 15, before meals, 165. Copper arsenite, gr. 1-100 before meals. Hydrastine, four granules before meals. Wash out the stomach with hot water by means of stomach tube before each meal. Hydrogen dioxide, teaspoonful in glassful of water before meals.

Gastric Ulcer: Exclusive milk diet. Rectal Enemata of Somatose. Liq. peptonoids. Beef tea, 371. Emulsion of cod-liver oil. If eggs are used, predigest them or add pepsin and hydrochloric acid. Bismuth subgallate, gr. 15, every four hours. Fowler's solution, one drop four times a day. Morphine and atropine hypodermically for severe pain. Swallow ice for hemorrhages. See gastric hemorrhage.

Gastritis; Acute: Calomel, gr. 1-20, every hour to allay the vomiting. Bismuth subgallate gr. 10, every two hours. Hyoscyamine, for vomiting and pain. Codeine, 275, for pain. Morphine and atropine for severe pain and vomiting. Feed entirely by rectum.

Glands, Lymphatic: Calcium sulphide, 185, to prevent suppuration. Calcium iodized (Calcidin), 183, in chronic enlargement. Triple Arsenates with Nuclein, six to twelve daily. Ichthyol applied pure over enlargement.

Gleet: Cantharidin, two granules every two hours. Euarol, local deep injections. Candle Bougies, No. 2.

Goitre: Thyroid extract, 307. Thymus extract in exophthalmic goitre, 311. Applications of tincture iodine. Electricity, particularly in young girls. Calcium iodized (Calcidin) two tablets four times daily.

Gonorrhea: Calcium sulphide to saturation. Aconitine for fever. Saline Laxative, move bowels freely. Zinc sulphocarbolate, 358. Corrosive

chloride, 262. Irrigation with permanganate of potassium, gr. 1, to pint of water. Abbott's Candle (Drainage) Bougies No. 1 the best treatment. Protargol injections grs. 2 to 4 to water oz. 1.

GOUT: Dieting of utmost importance. Salithia, teaspoonful every four hours. Colchicine, 191, three granules every three hours.

GUMS, AFFECTIONS OF: Zinc sulphocarbolate dissolved in distilled extract hamamelis for spongy and bleeding gums. Hydrogen dioxide, if suppuration. Chlorate potassium, dr. 1 to glassful of water.

HAY FEVER: Triple Arsenates with Nuclein, six to twelve daily. Atropine or hyoscyamine for profuse secretion; give until full physiological effect. Cocaine; spray nostrils for pain or constant sneezing.

HEADACHE: Acetanilid, 40. Caffeine, 175. Colchicine, 192, in gouty or rheumatic. Ergotin, 230, in congestive. Triple Arsenates with Nuclein, six to twelve daily in anemic. Monobromated camphor, 2 to 5 grains every two hours. Relieve constipation with Anticonstipation granules or Saline Laxative.

HEARTBURN: Sodium bicarbonate, dr. 1-2, before meals. Saline Laxative each morning. Abstain from sugars and starchy foods.

HEART DILATATION: Digitalin, 223. Ergotin and strychnine, 348.

HEART DISEASES: Caffeine, 176. Apocynin, 99. Convallamarin, 201. Digitalin, 213, 214. Glonoin, 250. Sparteine, 343.

HEART FAILURE: Caffeine, 176, 178, 186. Glonoin, 250. Sparteine, 342. Strophanthin, 345.

HEART, HYPERTROPHY: With excessive action, aconitine,

HEART PAINS OR DULL MUSCULAR SORENESS: Rest—abstain from coffee, stimulants or tobacco. Cactin, three granules every two or three hours. Strychnine arsenate, gr. 1-67, two to three granules every

two hours, 348. If very severe, morphine and atropine, small doses.

HEMATEMESIS: Tannin, gr. 10 every hour, dissolved in water. Ergotin, 237.

HEMATURIA: Ergotin, 238. Morphine and atropine, hypodermically. Gallic acid, gr. 10 every two hours.

HEMOPTYSIS: Ergotin, 235. Emetine. Atropine. Morphine hypodermically. Digitalin, if part is feeble. Sodium chloride, tablespoonful eaten slowly.

HEMORRHAGES: Atropine, 158. Postpartum, atropine, 159. Internal, 159. Digitalin, 219, postpartum, digitalin for all kinds. Emetine, 228, postpartum. Hemoptysis, emetine, 228. Ergotin, 230, postpartum. General rules for treating, ergotin, 231. Cerebral, ergotin, 235; pulmonary, ergotin, 235; gastric, ergotin, 235; intestinal, ergotin, 235; urinary, ergotin, 230.

HEMORRHAGE, CEREBRAL: Elaterium, three granules every two hours until effect. Croton oil, two drops wiped on the back of the tongue.

HEMORRHAGE, INTESTINAL: Ergotin, morphine, atropine, hypodermically, 257.

HEMORRHAGE, UTERINE: Ergotin, emetine, atropine, 232. Strychnine, 351, in postpartum.

HEMORRHOIDS: Injections of carbolic acid into each pile. The quickest, safest and best method is to slit open each pile and remove clot. Tannin, dr. 1; pulv. opii, dr. 1-2; acid carbolic, dr. 1-2; vaseline, oz. 1. Anoint piles, insert small portion into the rectum. Keep bowels moving freely by Saline Laxative.

HEPATIC COLIC: Atropine, 157. Glonoin, 248. Hyoscyamine, 257. Morphine and atropine, hypodermically, 285. Chloroform inhalations.

HEPATIC DISEASES: Aconitine in acute inflammation. Saline Laxative. Colchicine, 193, in chronic. Euonymin, 239, for pain over liver. Podophyllin, 321, for inactivity, lack of bile in stools; sodium salicylate for same purpose. Emetine for dark-green stools; sodium phosphate, dr. 1, continued

in pint of hot water before meals, when light-colored stools are present. Calomel, for excessive secretion of bile.

Hernia: Hyoscyamine, 257, give two granules every half-hour until full physiological effects to overcome muscular contraction. Morphine and atropine in full doses hypodermically. Chloroform inhalation if above means fail to assist in reduction.

Hernia of the Iris: Atropine, 159. Hyoscyamine, 257.

Herpes: Bismuth subgallate, 167.

Hiccough: Cicutine, three granules every hour until upper eyelids droop. Either 30 to 60 drops on sugar every hour—or in capsule—or 30 drops hypodermically over epigastrium. If prostration is not marked, give morphine and atropine hypodermically. Glonoin, 251.

Hoarseness: From overstraining the voice; dilute nitric acid, ten drops in half-glass of sweetened water every four hours. Helenin, 253, for hoarseness coming on at night. Calcium iodized (Calcidin) 182, one tablet every hour for acute or chronic. Emetine to increase secretion. Nitrate silver, gr. 20, to oz. 1 of water, locally applied.

How to Begin Alkaloidal Medication, 29.

Hydrocele: Carbolic acid pure, one dram injected into sac after withdrawal of fluid. Tincture iodine, one part; water, one part; inject one dram after withdrawal of fluid.

Hydropericardium: Pilocarpine, 316.

Hydrophobia: Cicutine, four to six granules every hour: 200. Chloroform during convulsions; medicinal treatment of little avail. Preventive; inoculation by Pasteur method. Hyoscyamine, 258.

Hydrothorax: Pilocarpine, 316. Elaterium, three granules every six hours until catharsis.

Hyperacidity: Bismuth subgallate, 164. Abstain from starchy foods and acid fruits. Alkali salts and mineral waters.

Hypertrophy of the Heart: Aconitine, 72.

Hypochondria: Correct digestive abnormalities, particularly the liver; for the latter use colchicine, two granules, podophyllin, two granules, every three hours. See that the bowels are moved normally. For sleeplessness, hyoscyamine or trional. Arsenic and caffeine both improve depressed spirits.

Hysteria: Rectal injections of ice water. If very severe, hypodermic injections of morphine and atropine; caution—fear of forming habit, 284. Emetine, gr. 1-6 every fifteen minutes, to produce nausea. Asafetida, dr. 1 doses of the tincture every half-hour. Cicutine, 198, six granules for erotic forms. Triple Arsenates, to build up nervous system. Apomorphine, 103, for crisis.

Idiocy: Alcohol a cause, 79. Thyroid extract, 308.

Impotence: Zinc phosphide, one granule, gr. 1-6, four times a day. Sanguinarine nitrate, three granules, gr. 1-67 each, every four hours. Strychnine, 353. Ergotin, gr. 2, every two hours if scrotal veins are relaxed.

Incontinence, Nocturnal: Atropine, 114, 157. Rhus aromatica, 115, ergotin and strychnine, 114. Arbutin, 113. Strange cause of, 115.

Indigestion: Dieting most important. Lavage of stomach before meals. Animal and vegetable pepsins. Physical exercise. Lactic or muriatic acid—but not where there are acid eructations. Sodium bicarbonate, before meals, or alkaline mineral waters where there is rheumatic, or uric-acid tendency. Quassin, strychnine and arsenic.

Infectious Diseases: Aconitine, 58, for fever. Calcium sulphide, 186.

Inflammation: Cold bathing. Aconitine, 54. Veratrine, in sthenic cases. Gelseminine, 244. Dosimetric Trinity, sodium salicylate in rheumatic inflammation. Morphine, 276, in serous or other painful inflammations. Saline Laxative or Epsom salt, particularly for onset of peritonitis. Acetanilid, for muscular, synovial or neurotic. Hot water bags or hot poultices over the seat of inflammation. Ice ap-

plications in acute rheumatic inflammations, pericarditis and peritonitis. Cantharidal collodion, for chronic inflammatory pains. Rest one of the most important remedies in the treatment of inflammation.

INFLUENZA: Aconitine, 73. Acetanilid, 40. Gelseminine will relieve muscular pains. Caffeine in depression.

INSANITY: Alcohol as a cause, 79. Hyoscine, 256. Hyoscyamine, 256, to produce sleep. Thyroid extract, 309.

INSECT BITES AND SNAKE BITES: Alcohol, 87. Apply ammonia, pure or dilute. Permanganate of potash; apply saturated solution. Sodium bicarbonate; make into a paste and apply.

INSOLATION: Hypodermic injection of antipyrin, gr. 10, in excessive fever. Ice baths and rectal injections of ice water in excessive fever. In asthenic form with pale face and subnormal temperature, glonoin, hot baths, caffeine, ammonia and ether internally.

INSOMNIA: Caffeine, grs. 5 to 10, in cerebral anemia. In mentally excited, hyoscyamine, 256, or cicutine, 196. Trional, 374. Morphine and atropine for pain. Hot bath sometimes is soothing. Chloral, gr. 20, often proves serviceable.

INTERMITTENT FEVER: Quinine, 327, usually specific. Quinine and arsenic prophylactic. Glonoin, 251. Atropine, 158, will abort an attack. Triple Arsenates with Nuclein, six to twelve daily for tonic effects. Gelseminine, 243.

INTERTRIGO: Bismuth subgallate, 167.

INTESTINAL CATARRH: Bismuth subgallate, gr. 15, before meals. Copper arsenite, gr. 1-100, three times a day. Calomel, gr. 1-20, sufficient to produce dark stools once in two weeks. Hydrastin, con., three granules every three hours. Dieting of utmost importance.

Intestinal Colic: Atropine, 157. Bismuth subgallate, 165. Copper arsenite, 203. Glonoin, 248. Morphine and atropine hypodermically.

Intestinal Worms: Round worm, Santonin and calomel tablets, one every hour until effect. Seat worms; quassin, 322, rectal injection of solution of twelve granules to cup of water. Tapeworm, Abbott's Tapeworm Remedy rarely fails.

Intussusception: Morphine and atropine hypodermically; first treatment in full doses. High injections into colon of solutions of seidlitz powders, separately; inject first the blue, afterwards the white. Dissolve six of each in pint of water.

Iritis: Homatropine locally prevents adhesions; acts more quickly than atropine and its effects pass off more quickly. Mercurials generally necessary.

Jaundice: Diet of utmost importance. Salithia, teaspoonful every four hours. Sodium phosphate, one dram in hot water night and morning. Podophyllin, 321. Euonymin, 239. Sodium salicylate, 265. Calomel, 1-10 gr. doses; relieves catarrhal conditions. Dilute nitro-muriatic acid, ten drops in water after meals.

Joints: Bryonin, 170, and colchicine, 191, for stiffness and soreness. Massage, excellent results produced in chronic stiffening resulting from non-use, as in fractures or dislocations. Cantharidal collodion for localized spots of pain. Uric-acid deposits likely the cause of many tender spots. Salithia, colchicine for cure—eschew meat diet.

Jugulation: 12. Value of, 10 to 11. Aconitine, 51, 53, 57 and 58.

Labor: Chloroform inhalations in severe pains. Morphine and atropine hypodermically for prolonged or nagging pains, 286. Caulophyllin, three granules every two hours for same purpose. Ergotin only after expulsion of head; particularly so in flabby, muscular conditions.

Lactation: Atropine, 153, to arrest secretion. Pilocarpine, to increase secretion. Nitrogenous diet,

eggs, meats, milk, to increase quantity and quality of milk.

Larynx: Aconitine, in acute inflammation. Codeine, for irritation or tickling sensations producing cough. Silver nitrate, gr. 20 to one ounce water; local application for constant tickling. Emetine or lobelin to increase secretion or liquify it. Apomorphine, 103, in acute laryngitis. Calcium iodized (Calcidin), 181, for hoarseness. Helenin for hoarseness, 253.

Laryngismus Stridulus: Hyoscyamine, 257. Inhalation of a few drops of chloroform checks at once. Glonoin quickly checks spasms.

Lead Poisoning: Epsom salt, half-ounce doses for constipation. Iodides to remove lead deposits. Sulphuric acid lemonade to prevent. See Colic, Lead.

Leucorrhea: Alum, sulphate of zinc, teaspoonful to pint of hot water for injection. Relieve constipation. Ichthyol and glycerin equal parts. Apply by means of cotton tampons. Buckley's Uterine Tonic. W-A Vaginal Antiseptics of sulphocarbolates.

Leucocythema: Triple Arsenates with Nuclein, six to twelve tablets daily. Arsenic, 119. Pay particular attention to the heart; if feeble, use digitalin or other heart tonics.

Locomotor Ataxia: Acetanilid, 41, relieves shooting pains. Electricity gives relief. Hyoscyamine, gr. 1-250; strychnine arsenate, gr. 1-134; two granules of each every three hours.

Lumbago: Acetanilid, gr. 5, every three hours, 41. Sodium salicylate, gr. 10 every two hours. Morphine and atropine hypodermically directly into painful muscle, 284. Turpentine application. Macrotin, three granules every two hours. Rhus tox. will sometimes cure.

Lupus Vulgaris: Triple Arsenates with Nuclein, six to twelve daily. Calcium iodized, two tablets four times a day. Arsenous acid, 134, locally. Zinc chloride, 135, locally. Tuberculin, 313.

LYMPHADENOMA: Triple Arsenates with Nuclein, six to twelve daily.

MALARIAL CACHEXIAS: Quinine, 325. Arsenic, 127, 128; nuclein, 94, 293, for anemia. Splenic enlargement, iodized calcium, two tablets four times a day. Quinine arsenate, 118.

MALARIAL FEVER: Quinine, 325. Arsenic, if quinine fails.

MANIA, ACUTE: Cicutine hydrobromate, four to six every three hours. Trional, twenty to thirty grains at bedtime. Hyoscyamine, 256.

MANIA, CHRONIC: Ergotin, gr. 5, three times a day. Digitalin, when pulse is rapid and feeble. Hyoscyamine, 256. Cicutine for muscular or mental activity, four to six granules every two hours until effect.

MASTITIS: Atropine to stop secretion, 153. Strap the breasts with figure of eight bandage. Poultices of flaxseed. Inunctions of hot camphorated oil. Use breast pump if secretion of milk is profuse.

MASTURBATION: Cicutine, 198, to control erotic desires. Potassium bromide, gr. 30 every three hours. Ergotin in relaxed state of scrotal blood vessels. Passage of a cold, steel sound every second day. Make strong mental impression of the curability of these cases. See Spermatorrhea.

MEASLES: Aconitine, 72. Digitalin in cardiac depression. Calcium sulphide, 185, 186. Caffeine and calcium iodized in pneumonia. Acetanilid, if headache is severe, fever high, and the desire is to reduce temperature quickly. Olive oil to allay irritation of the skin.

MELANCHOLIA: Cannabin, res., four to six granules every two or three hours. Trional, 375, hypnotic. Move bowels thoroughly with Anticonstipation granules, 95. Triple Arsenates, six to twelve tablets daily. Thyroid extract, 309.

MENINGITIS: For excessive pain in acute stage, morphine, 289. Aconitine, 73, or gelseminine, 243, for fever. Digitalin, for heart weakness. Acetanilid,

for pain and high fever if pulse is strong. Ice applications to nape of neck and head. Spirit camphor for depression. Veratrine, 379.

Menopause: Thyroid extract, 309. Ovarian extract, 311.

Menorrhagia: Atropine, 159. Ergotin, 232. Emetine, 228. Examine particularly into the cause, 232. Cannabin, res., four to six granules every two to three hours. Move the bowels freely.

Mental Excitement: Cicutine, 34, 196. Apomorphine, 103. Hyoscine, 255. Hyoscyamine, 256. Morphine, 275.

Mercurial Poisoning: Atropine for ptyalism. Chlorate of potash for mouth wash and also internally. Iodides or bromides internally to remove mercury. Hyoscyamine, 258, in tremor.

Metritis: Aconitine, 58, 72, if fever. Hot vaginal douches. Ichthyol, pure, applied on cotton wrapped probe into the cavity. Equal parts of ichthyol and glycerin for vaginal tampons. Local applications of equal parts of carbolic acid and glycerin. Buckley's Uterine Tonic. Free purgation. Saline Laxative. Complete rest in every particular.

Migraine: Acetanilid, gr. 2; caffeine, gr. 1-2; camphor monobromated, gr. 1-2; one or two tablets every hour for four or five doses. Caffeine, 175. Quassin, 322. Glonoin, 251, when face is pale. Atropine, 158. When face is pale and pupils contracted. Correct anemia, gastrointestinal and uterine disorders.

Milk: To check secretion of atropine, 153. Pilocarpine in suppression of, 319. Massage useful to increase secretion.

Mitral Stenosis: Convallamarin, 202. Mitral regurgitation, sparteine, 338. Strophanthin, 340.

Mumps: Pilocarpine, 319. Aconitine, if fever.

Myalgia: Acetanilid, gr. 2, every hour until ten grains are taken or until pain is relieved. Sodium salicylate, gr. 10, every two hours. Static electricity very useful. Hot-water applications; turpentine

applications. Macrotin, one granule every hour. Hypodermic injections of water. If pain is severe, morphine and atropine injected into muscle. Massage. Bryonin, 171.

MYXEDEMA: Thyroid extract, 309.

NARCOSIS: Glonoin, hypodermically, when from illuminating gas. Intravenous injections of saline solution. Oxygen inhalations. Artificial respiration, Hall's method, or draw out the tongue fifteen times per minute. Apomorphine, hypodermically, in poisoning. Faradization of pneumogastrics.

NEPHRITIS: Caffeine, 176. Glonoin, 252.

NERVOUSNESS: Cicutine, 197. Correct indigestion; forbid coffee, tea or stimulants; control the heart, or any uterine abnormality.

NEURALGIA: Aconitine from acute exposure with fever, 47, 68. Acetanilid, gr. 5, then gr. 2 every two hours for five doses, if severe, 41. Arsenic, 122, 127, 143. Morphine and atropine, hypodermically, if acute, 284. Aquapuncture, if chronic, at seat of pain. Triple Arsenates as general tonic, with nuclein, if anemia. Quinine, 328. Gelseminine for facial and ovarian, 243. Massage gives excellent results. Glonoin, 251, when face is pale. Ice applications in sciatica directly over painful spot. Remove constipation; displacements of uterus or ovaries; caries of teeth; nasal polypi or hypertrophy of turbinated bones. Restore all abnormal conditions to the normal, no matter how remote to neuralgia they may appear. Supraorbital; morphine and atropine, 284. Aconitine, 46, internally, also externally gr. 1 to dr. 1 of lard applied over seat of pain.

NIGHT SWEATS: Agaricin, 77. Atropine, 152. Build up the general system with Triple Arsenates and Nuclein.

NYMPHOMANIA: Cicutine, four to six granules every three hours; produce physiological effects and maintain them. Potassium bromide, thirty to sixty grains every four hours. Camphor monobromated,

gr. 5 every three hours. Remove patient from male influences, erotic literature or plays. Enforce physical exercise or hard work, only in female surroundings. Remove clitoris if necessary.

Obesity: Thyroid gland or extract, 310. Alkaline mineral waters. Forced physical exercise. Rigid diet.

Odema: Apocynin, 98. Calomel, 267. Cactin, digitalin; elaterium, three granules every six hours until effect. Nuclein for anemia.

Onychia: Acetanilid, locally applied. Hydrogen dioxide, constantly applied. Nitrate lead, locally applied.

Opium Poisoning; Caffeine, 176. Treatment of, 290. Trional, 375, to produce sleep in insomnia, while breaking up the habit.

Orchitis: Complete rest; ice applications; scrotum elevated. Ichthyol, pure, painted over scrotum. Chloride of ammonium, oz. 1 to one pint of water, very cooling application. Produce free catharsis by salines. Aconitine, if fever.

Otorrhea: Hydrogen dioxide and water, equal parts; fill external meatus repeatedly every two hours until frothing ceases, preceded by hot water injections. Sulphocarbolate of zinc, gr. 10 to water, one ounce; fill meatus every two hours.

Ovarian Neuralgia: Acetanilid, 41. Buckley's Uterine Tonic, two granules, atropine, 157, two granules every two to four hours. Make careful examination as to the condition of the pelvic organs.

Oxaluria: Nitro-muriatic acid dil., ten drops in water before meals.

Ozena: Vapor spray of iodine and carbolic acid. Oxygen spray inhalation. Spray of hydrogen dioxide and water, equal parts every two hours. Correct general secretions; constipation. Make skin active by hot baths and general massage. Improve general tone by Triple Arsenates. Bismuth subgallate, 168, as a snuff.

PAIN: Morphine, 273, and atropine hypodermically, best, but danger of producing habit in chronic cases. See Neuralgia. Cantharidal collodion for localized chronic pains. Ulcer of stomach, bismuth subgallate, 165. Codeine, 275. Waugh's Anodyne, 288, for infants.

PALPITATION: Cactin, 172. Convallamarin, 201. Sparteine, 342. Correct indigestion; eliminate coffee, tobacco and stimulants.

PARALYSIS: Strychnine arsenate, 353. Triple Arsenates; massage and electricity. Hyoscyamine in paralysis agitans, 258, two granules every three hours, may be combined with strychnine. Ergotin and strychnine in paralysis of bladder. Eserine for intestinal paralysis. Strychnine, 186, for paralysis in diphtheria.

PARASITES: Tinct. iodine or acetic acid, pure, in pityriasis versicolor. Sulphide potassium, dr. 1-2 to oz. 1 of water, for scabies. For pediculi pubes, mercury bichloride, gr. 4; alcohol, oz. 1; water, oz. 5. Also unguentum hydrargyri, applied pure.

PALSY: Hyoscyamine, 258. Cicutine and strychnine, gr. 1-134, three granules of each every four hours.

PEMPHIGUS: Triple Arsenates, six to twelve daily in chronic form. Atropine, maintained in physiological doses for acute cases. Arsenic, 127.

PERICARDITIS: Bryonin, 170. Morphine and atropine hypodermically, 340. Ice bags, 340.

PERITONITIS: Aconitine, 58, 72, for febrile conditions. Free purgative action by saline at the beginning, Epsom salt, 276. Morphine and atropine for pain, 276. Physostigmine salicylate, two granules, gr. 1-250, every two hours until pupils contract or bowels move. Defervescent Compound, 75. Turpentine; saturate flannel cloth and apply over abdomen. Danger in peritonitis, 62. Ice application very grateful in some cases. Flaxseed poultices. Absolute rest. Plenty of water per rectum. Complete fasting for several days. Feed per recutm. Diet in, 278. Strychnine, 351.

Pernicious Fever: Atropine, 158, hypodermically to prevent rigor. Quinine and antipyrin, 327, hypodermically to prevent rigor. Glonoin, for same purpose.

Perspiration: Atropine, 152, the best remedy for night sweats. Agaricin, 77. Permanganate potash, dr. 1, to pint of water for fetid perspiration of feet and axillæ.

Phagedena: Zinc chloride, powdered, dusted in—pure. Salicylic acid and acetanilid, equal parts, to fill cavity of ulcer. Nitric acid, pure, if resisting milder treatment. Resorcin to fill cavity of ulcer. Triple Arsenates with Nuclein, six to twelve daily, to restore normal tonus. Powdered charcoal made into a paste with pure sulphuric acid; apply.

Pharyngitis and Tonsillitis, Follicular: Aconitine and atropine for acute febrile movement, 58. Calcium sulphide to saturation. Galvano-cautery in recurrent and chronic forms; cauterize each follicle. Massage tonsils by dipping tip of finger in water, then either in alum or tannin. Attend to general health. Sexual excesses produce follicular tonsillitis; prohibit. Split open each follicle and apply solid nitrate of silver.

Phlegmon: Carbolic acid, thirty minims of a 5 per cent solution hypodermically injected into the swollen mass. Calcium sulphide to saturation prevents formation. Hot applications of water or poultices hastens suppuration.

Phthisis: Best nitrogenous diet with fat and cod-liver oil. Arsenic, 127. Nuclein, 299. Calcium sulphide, 185. Triple Arsenates. Creosote, increasing dose to full tolerance. Hypophosphites. Strychnine arsenate. Arsenic iodide, 118. Inhalations of oxygen, carbolic acid and iodine. Best treatment, constant out-of-doors life, particularly sleeping out of doors in Colorado.

Physiologic Effects: Aconitine, 45. Alcohol, 85. Aloin, 93. Apocynin, 97. Apomorphine, 100. Arsenic, 124. Bryonin, 169. Cactin, 172. Caffeine,

174. Colchicine, 190. Cicutine, 195. Digitalin, 211. Copper arsenite, 203. Emetine, 225. Ergotin, 230. Euonymin, 239. Gelseminine, 241. Glonoin, 246. Helenin, 253. Hyoscyamine, 255. Lobelin, 260. Mercury, 263. Morphine, 272. Suprarenal extract, 306. Thyroid extract, 306, 307. Pilocarpine, 314, 316. Podophyllin, 312. Quinine, 322. Sodium salicylate, 329. Sparteine, 337. Veratrine, 363, 364. Strychnine, 346.

PITYRIASIS: Acetic acid, pure, applied to spot, if not too large. Tincture iodine applied daily until epidermis is removed. One part of quick lime, two parts of sublimed sulphur boiled together in ten parts of water; apply several times daily.

PLEURISY: Aconitine during febrile stage, 58. Morphine and atropine hypodermically for pain. Applications of hot water or hot poultices. Potassium iodide, to promote absorption. Cantharidal collodion in chronic pains. Bryonin in chronic pleuritic stitch. Defervescent Compound, 75. Bryonin, 170. Gelseminine, 244. Codeine, 281. Veratrine, 379.

PNEUMONIA: 31. Aconitine, 58, will abort. Defervescent Compound, 75. Dosimetric Trinity, 73. Veratrine, 379. Gelsemin, 244. Strychnine, caffeine, 177, glonoin; the three last for cardiac depression. Digitalin, two to four granules every three hours in feeble heart. Blisters promote absorption. Spirit camphor, dr. 1 doses when rales are copious and expectoration feeble. Turpentine, twenty drop doses useful for same purpose. Nuclein solution, 299. Strophanthin, in heart failure, 345. Veratrine, 380.

POISONING: Acetanilid, 38. Aconite, 49. Produce vomiting by using apomorphine hypodermically, 102. Arsenic, 125, 144, 145. Atropine, 161. Bismuth subgallate, 167. Bryonin, 169. Colchicine, 190. Mercury, 263.

POLYURIA: Ergotin, gr. 3 every three hours, best remedy. Atropine; maintain physiological effects. Abstain from fluids as much as possible.

Prostatic Hypertrophy: Ergotin, three grains every three hours, best medicine. Alkalies and benzoates for acid urine, 111.

Prostatorrhea: Cantharidin, two granules every two hours. Barosmin, 109, three to six granules three times a day. Cicutine and potassium bromide for sexual excitement. Ergotin, if scrotal veins are enlarged.

Pruritus Vulvae: Cicutine, 200 and gelseminine, 244, three granules of each, taken together, every three hours. Vaginal injections of borax or sodium bicarbonate. Local applications of peppermint water, oz. 1 to borax, dr. 1. Nitrate silver, gr. 20, to water, oz. 1; apply locally.

Psoriasis: Cod-liver oil internally and externally. Arsenous acid, 127, in chronic cases. Ichthyol internally and externally. Thyroid extract, 309.

Ptyalism: Atropine, 153, to check secretion; chlorate potash or tannin solutions locally. Mercury, 263, produces.

Puerperal Convulsions: Chloroform inhalations. Morphine hypodermically, large doses. Veratrine, 380. Pilocarpine, 217.

Puerperal Fever: Dosimetric Trinity for fever. Acetanilid, for fever. For offensive lochia, uterine injection of several pints of solutions of either permanganate potash, carbolic acid or hydrogen dioxide. Caffeine, 177, for depression and collapse.

Puerperal Mania: Chloroform inhalations. Cicutine, six granules every four hours. Hyoscyamine, 256. Trional for insomnia. Morphine and atropine, hypodermically, should be tried if excitement is great.

Puerperal Peritonitis: Morphine and atropine hypodermically. Codeine, gr. 1-2 to 1. Turpentine for tympanites, twenty drops in emulsion every two hours. Hot applications. Physostigmine salicylate, hypodermically, gr. 1-75, every three hours to move bowels. See that the uterine cavity is aseptic and kept so.

PURPURA: Digitalin and cactin, to increase heart's action. Ergotin to contract blood vessels and prevent transudation. Triple Arsenates with Nuclein, six to twelve daily.

PYELONEPHRITIS: Barosmin—and other remedies under Chapter VIII. Salol, gr. 10 to 15, every three hours.

PYEMIA: Acetanilid for fever, caffeine and digitalin for heart depression. Nuclein for marked anemia. Calcium sulphide to saturation.

REMITTENT FEVER: Quinine, 326. Arsenic. Acetanilid and quinine, 327. Gelseminine, 244.

RENAL COLIC: Atropine, 157. Glonoin, 248. Hyoscyamine, 257. Morphine, 284 and atropine hypodermically. Chloroform inhalations.

RHEUMATISM, ACUTE: Aconitine, 58, 72, 329, for febrile conditions. Sodium salicylate, 338. Acetanilid, 39. Salithia, teaspoonful every four hours. Ice applications to seat of pain, 340. Defervescent Compound, 75. Colchicine, 191. Gelseminine, 243.

RHEUMATIC ARTHRITIS: Salithia, 192. Colchicine, 192. Bryonin; iodides, gr. 10 to 15, three times a day with three granules of colchicine, or bryonin.

RHEUMATISM, CHRONIC: Salithia, teaspoonful three times a day. Colchicine, 191, and bryonin, 170. Rhus toxicodendron, two to four granules in combination with any of the above every two to four hours. Potassium iodide, gr. 15 to 30, three times a day. Betz hot air apparatus, 341. Salicylate of sodium, 340. Alkaline mineral waters. Acetanilid and salol.

RICKETS: Cod-liver oil. Lactophosphate of lime. Syrup iodide iron. Iodized calcium. Diet very important; eggs, milk, cereals. Also massage. Keep patient out of doors.

RIGIDITY OF OS UTERI: Atropine, 157. Hyoscyamine, full doses. Morphine and atropine hypodermically. Caulophyllin, three granules every half-hour.

SALIVATION: Mercurial: 263. Treatment, 264.

Scabies: Sulphide of potassium, dr. 1-2 to water, one ounce; apply. Boil one part of quick lime with two parts of sublimed sulphur in ten parts of water; apply.

Scarlet Fever: Aconitine, 72. Digitalin, 216. Calcium sulphide, 186. Nuclein, 299. Atropine in small doses if eruption is ill defined, 159. Olive oil inunctions for irritability of skin. Hydrogen dioxide for gargle and also internally. Sulphocarbolates, 360. Cold water sponging for high temperature. Caffeine for suppression of urine. Give plenty of water. Antistreptococcic serum, 313.

Sciatica: 284. Atropine, 163. Morphine and atropine, deep injections at seat of pain. Galvanism. Deep injections of thirty minims of ether at seat of pain. Ice packed along course of nerve. Rhus tox., two to four granules alone or together with colchicine. Rheumatic, 192. Acetanilid, gr. 5, every three hours, 47. Massage along the course of the nerve. Correct displacements of the uterus, also constipation. Gelseminine, 244.

Sclerosis, Spinal: Galvanism and static electricity. Iodides. Massage. Acetanilid, gr. 5 to 10, for "lightning pains."

Scrofula: Cod-liver oil. Calcium iodized, 183. Triple Arsenates with Nuclein. Arsenic Iodide, 118.

Sea or Car Sickness: Move the bowels thoroughly, before starting, with Saline Laxative. Take two granules hyoscyamine every one or two hours to keep mouth slightly dry. Abbott's Antinausea for seasickness, an excellent remedy. Glonoin also useful; keep face slightly flushed.

Seminal Emissions: Cicutine, 198. See Masturbation and Spermatorrhea.

Senile Trembling: Hyoscyamine, 258.

Septicemia: Acetanilid, if much depression, combined with caffeine, 178. Digitalin and caffeine. Cold baths for excessive fever. Local applications of permanganate of potash. Mercury bichloride in so-

lution; also apply pure carbolic acid. Sulphocarbolate of zinc, 372. Nuclein, 300, for anemic.

SHALLER'S RULE for administering aconitine, 68 and 69.

SHOCK: Atropine, 158. Glonoin, 67. Caffeine hypodermically, gr. 5 to 10. Strychnine, 353.

SNAKE BITES: Alcohol, 87. See Insect Bites.

SPASMS, INFANTILE: Apomorphine, 103. Move bowels by enema. Induce vomiting. If fever is high, give aconitine every fifteen minutes. See Convulsions.

SPERMATORRHEA: Atropine and ergotin in relaxed state of blood vessels. Digitalin, 220, if pulse is feeble and rapid. Strychnine and ergotin in feeble erections. Cantharidin, two granules every three hours, for loss of desire. Cicutine, four granules every three hours, for excessive desire. Potassium bromide, dr. 1 doses, for same purpose. Camphor monobromated, gr. 5, to subdue desire, as sedative. Passing of cold steel sound for frequent losses, if tenderness exist at neck of bladder. Cold water applications to lumbar region and to external genitals and perineum, with gymnastic work. Exclude erotic literature and plays. See Masturbation.

SPINAL IRRITATION OR TENDERNESS: Electricity. Succession of Fly Blisters. Strychnine arsenate, 1-30, three times a day. Ergotin, gr. 5, or potassium bromide, dr. 1-2, every three hours in relaxed condition of blood vessels. Massage, very important. Macrotin, three granules every four hours.

SPLEEN: Triple Arsenates with Nuclein, six to twelve daily. Ergotin, gr. 5, every four hours in enlarged gland. Quinine, in enlargement, gr. 2, every two hours. Electricity.

STERILITY: Seek for cause. Remove uterine displacements. Make microscopial examination of semen before submitting wife to active treatment. Sanguinarine, three every three hours in frigidity. Phosphorus or zinc phosphide, an excellent remedy.

Stomach Ulceration: Bismuth subgallate, 164. Dieting of utmost importance. Tannin, gr. 5, every three hours. Surgical measures, if severe.

Stomatatis: Zinc sulphocarbolate, 372. Atropine, 153. Potassium chlorate, dr. 1 to glassful of water, used as a wash every hour. Local applications of fluid extract hydrastis direct to ulcers. Hydrogen dioxide applied pure or used as a wash, diluted. Correct gastrointestinal disturbances. Improve the general health. Diet.

Strangury:. Codeine, 282. Hyoscyamine, 257, until dryness of the mouth is produced in acute cases. Morphine and atropine hypodermically, if severe. Cantharidin, two granules every two hours, in chronic cases. Salol and alkalies. Barosmin, 109. Benzoate, 110.

Stricture, Urethral: Use graduated steel sounds. Electrolysis sometimes useful.

Strychnine Poisoning: Syphon tube, wash out stomach. Chloroform inhalations. Tannin gr. 15, every hour. Artificial respiration. Apomorphine, 103.

Substituting Alkaloidal Granules for other forms of medicine, 19.

Suppuration: Calcium sulphide internally to saturation, 185. Hydrogen dioxide, carbolic acid, potassium permanganate. Zinc sulphocarbolate or mercury bichloride locally, applied in solution. Nuclein, locally and internally. Triple Arsenates with Nuclein, six to twelve, daily.

Syncope: Atropine, 163. Glonoin, 247, both hypodermically. Nitrite amyl inhalations.

Synovitis: Arsenic, cod-liver oil, calcium iodized, in strumous cases. Tincture iodine painted over joint. Rest in acute cases. Massage in chronic cases.

Syphilis: Mercury, 266. Iodides. Triple Arsenates with Nuclein, six to twelve daily, as a tonic. Apply either of the following to primary ulcer: Equal parts of acetanilid and salicylic acid; acid nitrate of mercury; acid nitrate of mercury ointment, dr. 1; vaseline, oz. 1. Apply every three hours.

TAENIAE: Abbott's Tape Worm Remedy, quickest and surest preparation of male fern.

TEETHING: Waugh's Anodyne, 283.

TENESMUS OF BLADDER OR RECTUM: Atropine, 157. Codeine, 282. Hypodermic injection morphine and atropine, 282.

TETANUS: Anti-Tetanus Extract. Hyoscyamine, 258. Cicutine, 200. Gelsemin, 243. Morphine and atropine hypodermically. Anesthetics. Glonoin.

TETANY: Thyroid extract, 310.

THERMIC FEVER OR SUNSTROKE: Cold bath, if temperature is high. High rectal injections of ice water. Antipyrin and quinine, 328, hypodermically to reduce temperature rapidly. In asthenic form, with pale face, feeble pulse and subnormal temperature, glonoin, hot baths, hot rectal injections of hot water. Caffeine and atropine.

THROMBOSIS AND EMBOLISM: Treatment depends upon heart's action and force; if feeble, use caffeine, digitalin, atropine, ergotin. If too active, with febrile movement, aconitine, veratrine.

TINNITUS AURIUM: Glonoin, 251.

TONSILLITIS: Aconitine, 58. Calcium sulphide in follicular. Nuclein, 299. Hydrogen dioxide for gargle and local application. Begin treatment with gr. 1-10 calomel every hour until stools are dark. Follow with Saline Laxative.

TOOTHACHE: Cocaine, gr. 2; carbolic acid, dr. 1. Apply to cavity. Oil cloves applied to cavity. Glonoin, 251.

TORTICOLLIS: Galvanism. Morphine or atropine injected into the muscle, if pain is severe. Macrotin; acetanilid; rhus tox.; sodium salicylate; massage. Hot applications. Atropine, 157.

TRIFACIAL NEURALGIA: Acetanilid, 41. Aconitine, one granule every half-hour until tingling is produced—then every one or two hours. Quinine, 328.

TUBERCULOSIS: Living out of doors constantly in Colorado. Creosote. Nuclein, 299. Antistreptococcic serum, 313.

Tympanites: Eserine, 279. Prevent it by giving large doses of Saline Laxative at the beginning. Strychnine, 352.

Typhlitis: Ice applications. Complete fasting. Rectal feeding. Morphine or codeine for pain and to prevent peristalsis. High rectal injections of salt solution. Saline Laxative, at the beginning.

Typhoid Fever: 18. Diet, 366. Plenty of water. Peptonoids with creosote. Extract of beef, 371. Somatose, 367. No milk or solid food. The nearer to complete fasting the better the chances for cure. Calomel treatment, 266. Sulphocarbolates, 356. Copper arsenite. Cold bathing best means to reduce temperature, 358. Dosimetric Trinity or aconitine only at the beginning. Nuclein. Bismuth subgallate, 165. Strophanthin, 345.

Ulcers: Hydrogen dioxide applied pure. Chloride of zinc, 139. Arsenic, 134. Acetanilid, 42. Salicylic acid applied pure. Ichthyol applied pure after thorough cleansing with hydrogen dioxide. Nitric acid or acid nitrate of mercury to sloughing phagedena. In using severe caustics, first thoroughly cocainize the ulcer. Bismuth subgallate, 167. Nuclein, 301.

Uremia: Pilocarpine, 217. Elaterium, two every hour until effect. Caffeine, hypodermically, for weak heart and to promote diuresis. Morphine and chloroform for convulsions.

Uric-Acid Diathesis: Diet. Eliminate nitrogenous foods. Dilute nitro-muriatic acid, ten drops in water after meals. Colchicine, 193. Salithia, teaspoonful in glassful of water before meals. Massage. Muscular exercise. Gymnastics.

Urine: Ammonium benzoate, 112, in ammoniacal or alkaline. Caffeine, 176, in scanty or suppressed. Salithia, 192, in acid urine. Digitalin, 212, in suppression. Sodium bicarbonate, potassium citrate in acid urine.

URINE, INCONTINENCE OF: Atropine, 114, 157. Rhus aromatica, 115. Ergotin, 230. Strychnine, 114, 350. Seek the cause, 113.

UTERINE COLIC: Glonoin, 248, if face is pale. Hyoscyamine, 257. Morphine and atropine hypodermically. Cicutine, 200.

UTERINE FIBROIDS: Ergotin, 229.

UTERINE HEMORRHAGES: Ergotin, 232.

UTERUS; HYPERTROPHY, SUBINVOLUTION: Ergotin. Massage. Electricity. Strychnine. Buckley's Uterine Tonic.

UTERUS, ULCERATION: Ichthyol, apply pure on cotton tampons and allow to remain twenty-four hours; or equal parts of ichthyol and glycerin. Solution of iodine in warm carbolic acid, about dr. 1 iodine to oz. 1 of carbolic acid; apply locally, followed by glycerin tampons. Saturated solution of tannin in glycerin. Apply cotton tampon and allow to remain twenty-four hours. Improve general health. Overcome constipation particularly and uterine displacements.

VARICOCELE: Ligate veins, or perform ablation of same. Ergotin and strychnine with use of suspensory bandage frequently relieves. One exciting cause, sexual excesses, which prevent as much as possible.

VARIENT TREATMENT: 18.

VARIOLA: Aconitine, 72, for high fever. Calcium sulphide to saturation, 186. Nuclein in large doses. Caffeine in depression. Strychnine as tonic. Cicutine, in delirium. Trional for wakefulness. Silver nitrate in stick aborts pustules when applied to each one early. Tincture iodine applied to pustules prevents pitting. Ichthyol applied pure also prevents pitting; in each case exclude the light.

VASO-CONSTRICTORS: Digitalin, 213. Ergotin, 230.

VASO-MOTOR NERVES: Part they take in producing inflammation, 11.

Vertigo: Glonoin, 251, if face is pale. Correct indigestion. Restore abnormalities of the heart.

Vesical Colic: Hyoscyamine, 257. Codeine in gr. 1-2 doses every two hours. Morphine and atropine hypodermically. Seek the cause diligently and remove it.

Vomiting: Copper arsenite, 203, in vomiting of summer complaint. Calomel in bilious vomiting. Bismuth subgallate in gastric catarrh. Hyoscyamine (which see), in seasickness. Morphine and atropine hypodermically, in reflex or in gastric irritation, 286. Emetine, in vomiting of pregnancy. Fowler's solution in gastric catarrh. Swallowing small pieces of ice in gastritis. Carbolic acid in fermentative and in irritability from inflammation, chloroform, ten to fifteen drops on sugar. To produce vomiting, apomorphine, emetine.

Vomiting of Pregnancy: Ingluvin, cerium oxalate, of each, gr. 5, every two hours. Emetine, 228.

Whooping Cough: Calcium sulphide, 185, 187. Nuclein for anemia and cough. Atropine, 156. Trional gr. 1 to 4 every three hours, particularly to allay cough and induce sleep. Acetanilid, 41. Hyoscyamine will relieve spasmodic cough. Cicutine, 200. Gelseminine, 243.